

# **भारत का राजपत्र** **The Gazette of India**

प्राधिकार से प्रकाशित

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No. 45]

NEW DELHI, SATURDAY, NOVEMBER 11, 1967/KARTIKA 20, 1889

इस भाग में भिन्न पृष्ठ संख्या दी जाती है जिससे कि यह अलग संकलन के रूप में रखा जा सके।

Separate paging is given to this Part in order that it may be filed as a separate compilation.

## भाग II—खण्ड 3—उपखण्ड (i)

### PART II—Section 3—Sub-Section (i)

(रक्षा मंत्रालय को छोड़कर) भारत सरकार के मंत्रालयों और (संघ राज्य-क्षेत्रों के प्रशासनों को छोड़कर) केन्द्रीय प्राधिकारियों द्वारा जारी किए गए विधि के अन्तर्गत बनाए गए और जारी किए गये साधारण नियम (जिनमें साधारण प्रकार के आदेश, उप-नियम आदि सम्मिलित हैं)।

**General Statutory Rules (including orders, bye-laws etc. of a general character) issued by the Ministries of the Government of India (other than the Ministry of Defence) and by Central Authorities (other than the Administrations of Union Territories).**

## MINISTRY OF LAW

(Department of Legal Affairs)

New Delhi, the 25th October 1967

**G.S.R. 1678(Contract/Amendment No. 9).—**In exercise of the powers conferred by clause (1) of article 299 of the Constitution the President hereby directs that the following amendments shall be made in the notification of the Government of India in the Ministry of Law (Department of Legal Affairs) No. G.S.R. 585 dated the 1st February, 1966 relating to the execution of contracts and assurances of property, namely:—

In the said notification:—

1. In Part III which relates to the Ministry of Defence:—

(i) under Head 'A'—in clause (vi) (b) of item 1, for the words "licensing of fruit/betel stalls" the words "licensing of shops, fruit/betel stalls" shall be substituted.

(ii) under Head 'F'—after item 16, the following item shall be added, namely:—

"17. Contracts for the purchase of stores and equipment from Public Undertakings under the administrative control of the Ministry of Defence; by the Chief of Naval Staff/Director of Stores/Deputy Directors of Stores/Assistant Directors of Stores and Staff Officers (Stores) at Naval Headquarters."

2. In Part V which relates to the Ministry of External Affairs, in item 5, after the word "by" and before the word "an Under Secretary" shown in the List of Officers authorised to execute contracts and other instruments, the words "Officer on Special Duty (Internal Finance)" shall be inserted.

3. In Part VII which relates to the Ministry of Food, Agriculture, Community Development and Co-operation, under Head "A"—Department of Agriculture, after item 16, the following item shall be added, namely:—

"17. Contracts and other instruments relating to the Desert Development Board, Jodhpur; by the Director, Desert Development Board Jodhpur."

4. In Part XVI which relates to the Ministry of Mines and Metals, at the end of each clause (i) to (xiii) of item 4, the words "Superintending Geologists in-charge of circles" shall be added.

5. In Part XXII which relates to the Department of Atomic Energy, after Head 'H' the following Head shall be added, namely:—

"I. In the case of the Madras Atomic Power Project:

- (i) All contracts and/or instruments relating to works of all kinds;
- (ii) Contracts for the purchase, supply conveyance or carriage of equipment and stores;
- (iii) Contracts and/or instruments relating to disposal of surplus stores and equipment, scrap, etc.;
- (iv) Agreements relating to the supply of electrical power and water to the Project by agencies other than this Project;
- (v) Agreements for catering contracts in hostels and canteens;
- (vi) Agreements regarding grant of licence to outsiders of Project land for erecting petrol and diesel oil pump, sub-stations for supply of electricity etc., and agreements for licence to outsiders for crossing Project land by means of overhead transmission lines or under ground cables etc.;  
by the Chief Construction Engineer, Project Engineer (Civil), SO/ Engineer Grades G, F, SF, E, SE, D, SD2/SD1 and C, in the Project.
- (vii) Agreements for lease of buildings;
- (viii) Service agreements and Security Bonds of Cashiers and other Government servants or their sureties for the performance of their duties or the due accounting of the money or other property received by virtue thereof;
- (ix) Security Bonds for the due performance and completion of works;
- (x) Agreements for grazing cattle, for cultivation of land and instruments relating to sale of grass, trees or other products on Project land.  
by the Chief Construction Engineer, Project Engineer (Civil), Administrative Officer or Scientific Officer/Engineer Grades G, F, SF, E, SE, D, SD2, SD1 and C in the Project.

(xi) (a) Contracts for the purchase, supply and conveyance or carriage of equipment, stores and machinery;

(b) Contracts relating to servicing of equipment, instruments or machinery, fabrication and assembly of all equipment, components and materials including those required for the nuclear portion of the plant;

by the Chief Construction Engineer, Project Engineer (Civil), Stores Officer, Purchase Officer, Assistant Purchase Officer, Assistant Stores Officer.

6. In Part XXXI which relates to the Delhi Administration:—

(i) In item 2 under the existing list of officers authorised to execute contracts and other instruments, after the words "the Joint Director of Industries", the words "Land and Management Officer under the Deputy Commissioner, Delhi" shall be inserted.

(ii) in item 4, after the existing entry, the following proviso shall be added, namely:—

Provided that—

(1) in the case of Home Guard Organisation and Civil Defence Organisation such contracts and instruments may also be executed; by the Commandant General and Director of Civil Defence respectively or the Deputy Inspector General of Police incharge.

(2) in the case of Government Schools and other Government Institutions under the Directorate of Education, such contracts and instruments may also be executed; by the Heads of those schools or institutions, as the case may be, who are drawing and disbursing officers as well as Head of Office.

(iii) in proviso to item 5, after clause 5, the following clauses shall be added, namely:—

"(6) in the case of the Directorate of Public Relations, the contracts and other instruments in so far as these relate to clause (b) only, may also be executed; by the Director of Public Relations.

(7) in the case of Government Schools, under the Directorate of Education, such contracts and instruments may also be executed; by the Heads of Government institutions who are drawing and disbursing officers as well as Head of Office.

(8) in the case of Directorate of Social Welfare, such contracts and instruments may also be executed; by the Joint Director of Social Welfare.

[No. F. 17(1)/66-J.]

A. P. ROY, Dy. Secy.

## MINISTRY OF HOME AFFAIRS

New Delhi, the 30th October 1967

**G.S.R. 1679.**—In exercise of the powers conferred by the proviso to article 309 of the Constitution the President hereby makes the following rules regulating the method of recruitment to the post of Assistant Librarian in the Central Bureau of Investigation, namely:—

1. **Short title and commencement.**—(1) These rules may be called the Central Bureau of Investigation Assistant Librarian recruitment rules, 1967.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. **Application.**—These rules shall apply to the recruitment to the post of Assistant Librarian in the Central Bureau of Investigation.

**3. Classification and scale of pay.**—The classification of the post and the scale of pay attached thereto shall be as specified in columns 3 and 4 of the Schedule hereto annexed.

**4. Method of recruitment, age limit and other qualifications.**—The methods of recruitment, age limit, qualifications and other matters relating thereto shall be as specified in columns 6 to 11 of the schedule aforesaid.

Provided that the upper age limit specified in column 6 of the said schedule may be relaxed in the case of persons belonging to the Scheduled Castes, Scheduled Tribes or other special categories of persons in accordance with the general orders issued by the Central Government from time to time.

**5. Disqualification.**—(a) No person, who has more than one wife living or who, having a spouse living, marries in any case in which such marriage is void by reason of its taking place during the life time of such spouse, shall be eligible for appointment to the said post; and

(b) no woman, whose marriage is void by reason of the husband having a wife living at the time of such marriage or who has married a person who has a wife living at the time of such marriage, shall be eligible for appointment to the said post;

Provided that the Central Government may, if satisfied that there are special grounds for so ordering, exempt any person from the operation of this rule.

**SCHEDULE**  
**For the Recruitment of Assistant Librarian**

Name of the post.	Num-ber of posts	Classi-fication	Scale of pay	Whether selection or non-selection post	Age limit for direct recruitment	Educational and other qualifications prescribed for direct recruits.	Whether age and educational and other qualifications prescribed for direct recruits will apply in the case of promotees/deputa-tionists/transferees	Period of proba-tion	Method of recruitment whether by direct recruitment or by transfer/deputation and the percentage to be filled by various methods	In case of recruitment by promotion or transfer/deputation grades from which promotion or transfer/deputation to be made	Circumstances in which Union Public Service Commission is to be consulted in making recruitment
1	2	3	4	5	6	7	8	9	10	11	12
Assistant Librarian.	1	General Services Class III (Non-Ministerial) Non-Gazetted.	Rs. 210—10—290—15—320—15—425.	Not applicable.	27 years	<i>Essential:</i> (1) Degree of a recognised University. (2) Degree or diploma in Library Science from a University or a recognised institute (duration of diploma course should be one full academic year) <i>Desirable:</i> Experience in a Library of repute.	Age—No Educational qualification Yes	Two years	Transfer/Deputation falling which by direct recruitment.	Deputation/Transfer grade I of the CSCS possessing the requisite qualifications.	Not applicable.

[No. 213/4/67-AVD(II).]  
C. A. NAIR Under Secy.

New Delhi, the 3rd November 1967

**G.S.R. 1680.**—In pursuance of Rule 11 of the Indian Police Service (Pay) Rules, 1954 the Central Government in consultation with the Government of Uttar Pradesh hereby makes the following amendments to Schedule III appended to the said Rules:—

2. The amendments shall come into force from the date of their publication in the Gazette of India.

#### Amendments

In the said Schedule III,—

- (i) Under the heading "A—Posts carrying pay above the time-scale of pay of the Indian Police Service under the State Governments", again 'Uttar Pradesh' the following entries shall be inserted viz:  
Deputy Inspector General of Police, Training and Principal, Police Training College, Moradabad—Rs. 1,600—100—1,800.  
Commandant General, PRD, and Home Guards, U.P., Lucknow—Rs. 1,600—100—1,800.
- (ii) Under the heading "B—Posts carrying pay in the senior time-scale of the Indian Police Service under the State Governments including posts carrying special pays in addition to pay in the time-scale" again 'Uttar Pradesh'.
  - (a) the following entries shall be inserted, viz., Staff Officer to the Commandant General, PRD, and Home Guard, U.P., Lucknow.
  - (b) the following entry shall be deleted, viz:  
Principal, Police Training College, Moradabad.

[No. 7/1(15)-1/66-AIS(I)]

**G.S.R. 1681.**—In pursuance of sub-rule (2) of rule 4 of the Indian Police Service (Cadre) Rules, 1954 the Central Government in consultation with the Government of Uttar Pradesh have revised the strength and composition of the Indian Police Service cadre of Uttar Pradesh and hereby direct that in the Schedule to the Indian Police Service (Fixation of cadre strength) Regulations, 1955:

For the entries relating to Uttar Pradesh the following entries shall be substituted, namely:—

#### UTTAR PRADESH

1. Senior posts under State Government	..	97
Inspector General of Police		1
Deputy Inspectors General of Police	..	12
Deputy Inspector General of Police Training and Principal, Police Training College, Moradabad	...	1
Commandant General, PRD, and Home Guards, U.P., Lucknow		1
Assistant to Inspector General of Police	...	1
Assistant Inspector General of Police Railways	...	1
Superintendents of Police	..	48
Superintendent of Police, Headquarters	..	1
Superintendent of Police, Kanpur City	..	1
Superintendents of Police, Intelligence Department	..	4
Superintendents of Police, Criminal Investigation Department		6
Additional Superintendents of Police		6
Commandants, P.A.C. Battalions	..	12
Administrative Commandant, P.R.D., U.P. Lucknow	...	1
Staff Officer to the Commandant General PRD and Home Guards, U.P., Lucknow	..	1

2. Senior posts under Central Government at the rate of 10 per cent of 1 above	... 39
	.. 136
3. Posts to be filled by promotion in accordance with rule 9 of the Indian Police Service (Recruitment) Rule, 1954 at the rate of 25 per cent of 1 and 2 above	.. 34
4. Posts to be filled by direct recruitment 2 minus 3	... 102
5. Deputation Reserve at the rate of 20 per cent of 4 above	.. 20
6. Leave Reserve at the rate of 11 per cent of 4 above	.. 11
7. Junior posts at the rate of 20.60 per cent of 4 above	... 21
8. Training Reserve at the rate of 10.59 per cent of 4 above	.. 11
Direct Recruitment posts	.. 165
Promotion Posts	... 34
Total Authorised Strength	.. 199

2. The amendment shall come into force on the date of its publication in the Gazette of India.

[No. 7/1(15)/66-AIS(I).]

**G.S.R. 1682.**—In pursuance of sub-rule (1) of rule 8 of the Indian Administrative Service (Recruitment) Rules, 1954, the Central Government, in consultation with the Government of Rajasthan and the Union Public Service Commission, hereby makes the following regulations further to amend the Indian Administrative Service (Appointment by Promotion) Regulations, 1955, namely :—

1. (1) These Regulations may be called the Indian Administrative Service (Appointment by Promotion) Fifteenth Amendment Regulations, 1967.

(2) They shall come into force on the date of their publication in the Official Gazette

2. In the Schedule to the Indian Administrative Service (Appointment by Promotion) Regulations, 1955, in the entries in column 3 relating to the State of Rajasthan, for the words 'Additional Chief Secretary to the Government of Rajasthan' the words 'Seniormost Member of the Board of Revenue' shall be substituted.

[No. 18/19/67-AIS(III).]

#### CORRIGENDUM

New Delhi, the 2nd November 1967

**G.S.R. 1683.**—This Ministry's Notifications No. 7/12/67-AIS(I), dated the 4th October, 1967 published under G.S.R. No. 1547 and G.S.R. 1548 in the Gazette of India, Part II, Section 3(i), dated the 21st October, 1967, are hereby cancelled.

[No. 7/12/67-AIS(I).]

A. N. BATBYAL, Under Secy.

#### CORRIGENDA

New Delhi, the 30th October 1967

**G.S.R. 1684.**—In the notification to the Government of India in the Ministry of Home Affairs No. F. 15/3/67-UTL-97 dated the 24th August, 1967, published as

G.S.R. 1316, at pages 1442 to 1458 in the Gazette of India, Part II, Section 3, Sub-section (i), dated the 2nd September, 1967,—

(1) at page 1442,—

(i) in lines 29 and 30, for "presidency-town", read "Presidency-town";  
and

(ii) in line 45, for "or", read "of";

(2) at page 1443,—

(i) in line 5, for "defind", read "defined"; and

(ii) in line 41, for "subscription", read "subscriptions";

(3) at page 1444, at the end of line 19, for "section 30;" read "section 30:";

(4) at page 1445, in line 33, for "Filling", read "Filing";

(5) at page 1448, in line 39, for "defaults", read "defaults";

(6) at page 1449,—

(i) in line 18, for "due on demand", read "on demand"; and

(ii) in line 54, for "state", read "states";

(7) at page 1450,—

(i) in line 17, for "insolvent", read "in solvent"; and

(ii) in line 20, for "right", read "rights";

(8) at page 1451, in line 43, for "Regulation, Banking Companies Act, 1949", read "Banking Regulation Act, 1949";

(9) at page 1452, in line 9, for "enable", read "unable";

(10) at page 1455, in line 46, for "particularly", read "particular";

(11) at page 1457, in lines 37 and 39, for "II", read "2".

[No. F. 15/3/67-UTL.]

V. S. BENDRE, Under Secy.

## MINISTRY OF FINANCE

(Department of Economic Affairs)

New Delhi, the 30th October 1967

G.S.R. 1685.—In exercise of the powers conferred by clause (2) of article 77, read with clause (1) of article 299, of the Constitution, the President hereby makes the following rule, namely:—

The Credit Agreement between the President of India and De Nederlandse Investerings bank Veer Ontwikkelinglanden N. V. The Hague, relating to the loan of Dutch Guilders 26 million (Dutch Guilders twenty-six million) for the year 1967-1968, shall be executed and authenticated on behalf of the President by the Ambassador of India in the Netherlands.

[No. F. 14(33)-EI/67.]

By order and in the name of  
President of India.

Y. T. SHAH, Jt. Secy.

(Department of Economic Affairs)

New Delhi, the 11th September 1967

G.S.R. 1686.—In exercise of the powers conferred by the proviso to article 309 of the Constitution, the President hereby makes the following rules, namely:

1. **Short Title.**—These rules may be called the Ministry of Finance, Department of Economic Affairs Section Officer (Hindi) Recruitment Rules, 1967.



2. **Application**—They shall apply to the post of Section Officer (Hindi), Department of Economic Affairs in the Ministry of Finance

3. **Number of post, classification and scale of pay.**—The number of the post, its classification and the scale of pay attached thereto shall be as specified in columns 2 to 4 of the Schedule annexed hereto.

4. **Method of Recruitment, age limit, qualifications etc.**—The method of recruitment to the post, age limit, qualifications and other matters relating thereto shall be as specified in columns 5 to 13 of the said Schedule.

Provided that the upper age limit specified for direct recruits may be relaxed in the case of candidates belonging to Scheduled Castes and Scheduled Tribes and other special categories of persons in accordance with the orders issued by the Central Government from time to time.

5. **Disqualification.**—(a) No person who has more than one wife living or who having a spouse living marries in any case in which such marriage is void by reason of its taking place during the life time of such spouse shall be eligible for appointment to the post; and

(b) no woman whose marriage is void by reason of the husband having a wife living at the time of such marriage or who has married a person who has a wife living at the time of such marriage, shall be eligible for the post:

Provided that the Central Government may, if satisfied that there are special grounds for so ordering, exempt any person from the operation of this rule

6. **Power to relax**—Where the Central Government is of opinion that it is necessary or expedient so to do, it may by order, for reasons to be recorded in writing, relax, in consultation with the Union Public Service Commission any of the provisions of these rules with respect to any class or category of persons.

## Recruitment Rules for the post of Section Officer(Hindi) in the Ministry of Finance (Department of Economic Affairs)

[File No. F. 3/8(14),66 RR.]

Name of Post	No. of Posts	Classification	Scale of Pay	Whether Selection Post or Non-Selection Post	Age limit for direct recruits	Educational and other qualifications required for direct recruits	Whether age and educational qualifications prescribed for the direct recruits will apply in the case of Promotees	Period of probation, if any	Method of rectt. whether by direct rectt. or by promotion or by deputation/transfer & percentage of the vacancies to be filled by various methods	In case of rectt. by promotion/deputation/transfer, grades from which promotion/deputation/transfer to be made	If a DPC exists what is its composition	Circumstances in which U.P.S.C. is to be consulted in making rectt.
I	2	3	4	5	6	7	8	9	10	11	12	13
Section Officer (Hindi).	1	General Central Service Class II Gazetted Ministerial.	Rs. 350 (400)-25-500-30-590-EB-30-800-EB-30-830-35-900.	Selection	35 years and below. (Relaxable for Government servants).	Essential : (i). Master's degree in Hindi or Sanskrit or English with Hindi as an elective subject at degree level (in case of M. A's. in Sanskrit and English) from a recognised University or equivalent with sound knowledge of English. (ii) About 3 years experience of termino-	No	2 years	Promotion failing which by transfer on deputation failing both by direct recruitment.	Promotion: Hindi Translators in the department with 5 years service in the grade.  Transfer on deputation  Suitable Officers holding analogous posts from Central/State Government.  (Period of	Class II Departmental Promotion Committee.	As required under the rules.

logical work  
in Hindi and/  
or translation  
work from  
English into  
Hindi and  
*vice versa*.

(iii) Knowledge  
of budgetry,  
financial and  
accounting  
terminology  
in Hindi.  
(Qualifications  
relaxable at  
Commission's  
discretion in  
case of can-  
didates other-  
wise well  
qualified).

*Desirable :*

Economics as  
one of the sub-  
jects in the  
Degree exa-  
mination.

deputation  
ordinarily  
not exceeding  
3 years).

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[No. F. 18(5)-Admn-I/66.]

New Delhi, the 14th September 1967

**G.S.R. 1687.**—In exercise of the powers conferred by the proviso to article 309 of the Constitution, the President hereby makes the following rules to amend the Library Attendants (Class III Posts) Recruitment Rules, 1962, namely:—

1. These rules may be called the Library Attendants (Class III Posts) Recruitment Amendment Rules, 1967.

2. In column 3 of the Schedule to the Library Attendants (Class III Posts) Recruitment Rules 1962, for the word "non-ministerial", the word "ministerial" shall be substituted.

[No. F. 18(5)-Admn-I/62.]

S. N. MATHUR, Under Secy.

## वित्त मंत्रालय

### (अर्थ विभाग)

नई दिल्ली 11 सितम्बर, 1967

**जी०एस०आर० 688:**—संविधान के अनुच्छेद 309 के परन्तुक द्वारा प्रदत्त अधिकारों का प्रयोग करते हुए, राष्ट्रपति ने एतद्वारा निम्नलिखित नियम बनाये हैं, अर्थात् —

1. संक्षिप्त नाम.—ये नियम वित्त मंत्रालय, अर्थ विभाग अनुभाग अधिकारी (हिन्दी) भरती नियमावली, 1967 कहलायेंगे।

2. प्रयुक्ति.—ये नियम वित्त मंत्रालय के अर्थ विभाग के अनुभाग अधिकारी (हिन्दी) के पद के सम्बन्ध में लागू होंगे।

3. पदकी संख्या, वर्गीकरण और वेतन-मान.—पद की संख्या, उसका वर्गीकरण और उसका वेतन-मान संलग्न अनुसूची के 2 से 4 तक के कालमों में दिये गये व्योरे के अनुसार होगा।

4. भरती की प्रणाली, वय-सीमा, अर्हताएं आदि.—इस पद के लिए भरती की प्रणाली, वय-सीमा, अर्हताएं और उनसे सम्बन्ध दूसरे मामले उक्त अनुसूची के 5 से 13 तक के कालमों में दिये गये व्योरे के अनुसार होंगे।

परन्तु सीधी भरती के लिए निर्धारित ऊपरी वय-सीमा के सम्बन्ध में, अनुसूचित जातियों और अनुसूचित आदिम जातियों और अन्य विशेष श्रेणियों के उम्मीदवारों को, समय-समय पर केन्द्रीय सरकार द्वारा जारी किये गये आदेशों के अनुसार, छूट दी जा सकती है।

5. अनर्हता.—(क) कोई भी व्यक्ति, जिसकी एक से अधिक पत्नियां जीवित हों या जो एक पत्नी के जीवित रहते, ऐसी स्थिति में विवाह करता है, जिस में वह विवाह उस पत्नी के जीवन-काल में होने के कारण अवैध हो, इस पद पर नियुक्ति के लिए पात्र नहीं होगा; और

(ख) कोई भी स्त्री, जिसका विवाह, विवाह के समय पति की एक पत्नी जीवित होने के कारण अवैध हो या जिसने ऐसे व्यक्ति से विवाह किया हो, जिसकी एक पत्नी उस विवाह के समय जीवित हो, इस पद के लिए पात्र नहीं होगी।

परन्तु यदि केन्द्रीय सरकार इस बात से संतुष्ट हो जाय कि ऐसा आदेश देने के लिए विशेष आधार हैं, तो वह किसी भी व्यक्ति को इस नियम के प्रवर्तन से छूट दे सकती है ।

6. छूट देने का अधिकार:—जहां केन्द्रीय सरकार की यह राय हो कि ऐसा करना आवश्यक या उचित है, वहां वह, आदेश द्वारा लिखित रूप में दिये गये कारणों के लिए, संघीय लोक सेवा आयोग के परामर्श से, किसी भी वर्ग या श्रेणी के सम्बन्ध में, इन नियमों के उपबन्धों में से किसी भी उपबन्ध से छूट दे सकती है ।

बिना मंत्रालय (अर्थ विभाग) के अनुभाग-अधिकारी (हिन्दी) के पद के लिए भरती के नियम

पद का पदों वर्गी- नाम की करण संख्या	वर्तमानमान	प्रवरण-पद (सेलेक्शन- पोस्ट) या प्रवरण-पद से भिन्न पद	सीधी भरती के लिए वय- सीमा	सीधी भरती के लिए आवश्यक शिक्षा-सम्बन्धी और दूसरी ग्रहताएं
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(1)	(2)	(3)	(4)	(5)	(6)	(7)
अनुभाग 1	सामान्य	350 (400)	प्रारण-पद	35 वर्ष और	अभिचार्यः	
अधिकारी	केन्द्रीय	-25-500-	(सेलेक्शन-	इससे कम	(i) किसी मान्यता-प्राप्त	
(हिन्दी)	सेवा वर्ग	30-590-	पोस्ट)	(सरकारी	विश्वविद्यालय से हिन्दी	
	II	दक्षतारोध-		कर्मचारियों	या संस्कृत या अंग्रेजी में	
	राजपत्रित	30-800-		के लिए छूट	एम० ए० की डिग्री	
	लिपिक-	दक्षतारोध-		दी जा सकती	जिसके साथ (यदि एम०	
	वर्गीय	30-830-		है)।	ए० संस्कृत और अंग्रेजी	
		35-900 रु०			में हो तो) डिग्री-स्तर पर	
					हिन्दी वैकल्पिक विषय	
					होना चाहिए या बराबर	
					की ग्रहता जिसके साथ	
					अंग्रेजी का अच्छा ज्ञान	
					आवश्यक है ।	
					(ii) हिन्दी शब्दावली	
					सम्बन्धी-कार्य का और/	
					या अंग्रेजी से हिन्दी में और	
					हिन्दी से अंग्रेजी में अनुवाद	
					का लगभग 3 वर्ष का	
					अनुभव ।	
					(iii) हिन्दी में बजट-	
					सम्बन्धी, वित्तीय और	
					लेखा-सम्बन्धी शब्दावली	
					का ज्ञान । (अन्यथा अच्छी	
					योग्यता वाले उम्मीदवारों	

[सं० एफ० 03/8(14)/66-आर० आर०]

सीधी भरती परीक्षा के लिए निर्धारित अवधि यदि रित वय और कोई हो तो शिक्षा-संबंधी प्रहृताएं पदोन्नति पाने वालों के संबंध में लागू होंगी या नहीं ?	भरती की प्रणाली- पदोन्नति/प्रति- सीधी भरती अथवा नियुक्ति/स्थानान्तरण पदोन्नति अथवा द्वारा भरती के समिति हो प्रतिनियुक्ति/स्था- सम्बन्ध में किन तो उसका में संघीय लोक नान्तरण द्वारा तथा पदक्रमों से पदोन्नति/ गठन क्या सेवा आयोग से परामर्श किया जाएगा ।	यदि विभागीय भरती करते समय किन परिस्थितियों में संघीय लोक सेवा आयोग से परामर्श किया जाएगा ।
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(8)	(9)	(10)	(11)	(12)	(13)
नहीं	2 वर्ष	पदोन्नति द्वारा, पदो- पदोन्नति :			
		अति न होने पर विभाग के उच्चिन्वी वर्ग ॥ विभा- जैसा कि प्रतिनियुक्ति पर अनुवादकों में से गीय पदोन्नति नियमों के स्थानान्तरण द्वारा जिनकी अनुवादक- समिति अन्तर्गत -दोनों प्रणालियों पदक्रम में 5 वर्ष आवश्यक है । द्वारा भरती न की सेवा हो । किये जाने पर सीधी भरती द्वारा । प्रतिनियुक्ति पर स्थानान्तरण :			
		केन्द्रीय/राज्य सर- कारों के उपयुक्त अधिकारियों में से जो समान पदों पर काम कर रहे हों । (सामान्यतः प्रति- नियुक्ति की अवधि 3 वर्ष से अधिक नहीं होगी) ।			

(1)	(2)	(3)	(4)	(5)	(6)	(7)
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के सम्बन्ध में आयोग के  
विवेक के अनुसार अर्हताओं  
के सम्बन्ध में छूट दी  
जा सकती है।

। ीय : डिग्री-परीक्षा  
विषयों में अर्थशास्त्र  
क विषय रहा हो।



8	9.	10	11	12	13
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[सं० एफ० 18(5)-एडमिनिस्ट्रेशन-1/66]

नई दिल्ली, 14 सितम्बर, 1967

जी० एस० आर० 1689:—संविधान के अनुच्छेद 309 के परन्तुक द्वारा प्रदत्त अधिकारों का प्रयोग करते हुए, राष्ट्रपति ने पुस्तकालय परिचर (वर्ग III पद) भरती नियमावली, 1962 का संशोधन करने के लिए एतद्-द्वारा निम्नलिखित नियम बनाये हैं, अर्थात् :

1. ये नियम पुस्तकालय परिचर (वर्ग III) पद) भरती संशोधन नियमावली, 1967 कहलायेंगे।

2. पुस्तकालय परिचर (वर्ग III पद) भरती नियमावली, 1962 की अनुसूची के कालम 3 में "अलिपिक वर्गीय" (नान-मिनिस्टीरियल) शब्द के स्थान पर "लिपिक वर्गीय" शब्द पढ़ा जाय।

[सं० एफ० 18(5)-एडमिनिस्ट्रेशन-1/62]

स्व० ना० माथुर, अनुसचिव,

## MINISTRY OF FINANCE

### CUSTOMS AND CENTRAL EXCISES

New Delhi, the 4th November 1967

**G.S.R. 1690.**—In exercise of the powers conferred by sub-section (2) of section 75 read with sub-section (3) of section 160 of the Customs Act, 1962 (52 of 1962), and section 37 of the Central Excises and Salt Act, 1944 (1 of 1944), the Central Government hereby makes the following further amendment in the Customs and Central Excise Duties Export Drawback (General) Rules, 1960, namely:—

1. These rules may be called the Customs and Central Excise Duties Export Drawback (General) fifty-fourth Amendment Rules, 1967.

2. In the First Schedule to the Customs and Central Excise Duties Export Drawback (General) Rules, 1960, the entries in column 3 against Serial No. 33 shall be omitted.

This notification shall be deemed to have come into force on the 30th day of September, 1967.

[No. 62/F. No. 1/20/67-DBK.]

**G.S.R. 1691.**—In exercise of the powers conferred by sub-section (2) of section 75 read with sub-section (3) of section 160 of the Customs Act, 1962 (52 of 1962) and section 37 of the Central Excises and Salt Act, 1944 (1 of 1944), the Central Government hereby makes the following further amendment in the Customs and Central Excise Duties Export Drawback (General) Rules, 1960, namely:—

1. These rules may be called the Customs and Central Excise Duties Export Drawback (General) fifty-fifth Amendment Rules, 1967.

2. In the First Schedule to the Customs and Central Excise Duties Export Drawback (General) Rules, 1960, for Serial No. 4(G) sub-item No. (20) and the entries relating thereto, the following shall be substituted, namely:—

“(20) Mild Steel pipes and tubes, all sorts, and fittings thereof:—

(a) (i) Ungalvanised, made out of mild steel skelp—Rs. 262·50 per tonne.

Provided that at the time of exportation, the exporter produces evidence to the satisfaction of the Collector of Customs that the goods have been manufactured from mild steel skelp only;

(ii) Ungalvanised, other than those made out of mild steel skelp—Rs. 183·75 per tonne.

(b) (i) Galvanised made out of mild steel skelp—Rs. 280·87 per tonne.

Provided that at the time of exportation, the exporter produces evidence to the satisfaction of the Collector of Customs that the goods have been manufactured from mild steel skelp only.

(ii) Galvanised, other than those made out of mild steel skelp—Rs. 207·63 per tonne.

(c) Seamless steel pipes and tubes—Rs. 141 per tonne.

[No. 64/F. No. 1/108/66-DBK.]

**G.S.R. 1692.**—In exercise of the powers conferred by sub-section (2) of section 75 read with sub-section (3) of section 160 of the Customs Act, 1962 (52 of 1962) and section 37 of the Central Excises and Salt Act, 1944 (1 of 1944), the Central Government hereby makes the following rules further to amend the Customs and Central Excise Duties Export Drawback (General) Rules, 1960, namely,—

1. These rules may be called the Customs and Central Excise Duties Export Drawback (General) fifty-sixth Amendment Rules, 1967.

2. In the Customs and Central Excise Duties Export Drawback (General) Rules, 1960, in the First Schedule, for serial No. 25 and the entries relating thereto, the following shall be substituted and shall be deemed to be substituted with effect from the 10th day of July, 1967, namely:—

“25 Polyvinyl Chloride Plastic Cables

Two rupees and fifty two paise per Kilogramme of Polyvinyl Chloride Plastic content, and one rupee and fifty paise per Kilogramme of Copper content.”

[No. 65/F. No. 1/21/67-DBK.]

**G.S.R. 1693.**—In exercise of the powers conferred by sub-section (2) of section 75 read with sub-section (3) of section 160 of the Customs Act, 1962, (52 of 1962), and section 37 of Central Excises and Salt Act, 1944 (1 of 1944), the Central

Government hereby makes the following rules further to amend the Customs and Central Excise Duties Export Drawback (General) Rules, 1960, namely :—

1. These rules may be called the Customs and Central Excise Duties Export Drawback (General) fifty-seventh Amendment Rules, 1967.

2. In the Second Schedule to the Customs and Central Excise Duties Export Drawback (General) Rules, 1960, after Serial No. 277 and the entries relating thereto, the following shall be added, namely:—

“278 Caustic Soda”.

[No. 66/F. No. 278/1/67-DBK.]

## CUSTOMS

*New Delhi, the 4th November 1967*

**G.S.R. 1694.**—In exercise of the powers conferred by sub-section (1) of section 75 read with sub-section (3) of section 160 of the Customs Act, 1962 (52 of 1962), the Central Government hereby makes the following further amendment in the notification of the Government of India, in the Ministry of Finance (Department of Revenue) No. GSR 575 (55/F. No. 34/86/60-Cus. IV) dated the 28th May, 1960 namely:—

In the Schedule to the said notification, after Serial No. 345 and the entries relating thereto, the following shall be inserted, namely:—

“346 Caustic Soda”.

[ No. 111/F. No. 278/1/67-DBK.]

## (Department of Revenue & Insurance)

### MEDICINAL AND TOILET PREPARATIONS

*New Delhi, the 11th November 1967*

**G.S.R. 1695.**—In exercise of the powers conferred by Section 19 of the Medicinal and Toilet Preparations (Excise Duties) Act, 1955 (16 of 1955), the Central Government hereby makes the following rules further to amend the Medicinal and Toilet Preparations (Excise Duties) Rules, 1956, namely:—

1. These rules may be called the Medicinal and Toilet Preparations (Excise Duties) 1st Amendment Rules, 1967.

2. In the Medicinal and Toilet Preparations (Excise Duties) Rules, 1956, in rule 94, for the existing marginal heading, the following marginal heading shall be substituted, namely :—

“The applicant to be in possession of the requisite licences under the Drugs Cosmetics Act, 1940”.

[No. 14/F. No. 45/22/67-Opium.]

## CORRIGENDUM

*New Delhi, the 4th November 1967*

**G.S.R. 1696.**—In the notification of the Government of India in the Ministry of Finance (Department of Revenue and Insurance) No. G.S.R. 1406 dated the 16th September, 1967, published at pages 1536 and 1537 of the Gazette of India, Part II, Section 3 (i) dated the 16th September, 1967, at page 1536, in the last line,—

for “4 m.m. hinges”

read “8 m.m. hinges”

[No. 63/F. No. 1/31/65-DBK.]

G. P. DURAIRAJ, Dy. Secy.

**(Department of Revenue and Insurance)****CENTRAL EXCISES***New Delhi, the 11th November 1967*

**G.S.R. 1697.**—In exercise of the powers conferred by sub-rule (1) of rule 8 of the Central Excise Rules, 1944, and in supersession of the Notification of the Government of India in the Ministry of Finance (Department of Revenue) No. 27/62-Central Excises, dated the 24th April, 1962 (as subsequently amended), the Central Government hereby exempts power alcohol falling under Item No. 6 of the First Schedule to the Central Excises and Salt Act, 1944 (1 of 1944), from so much of the duty of excise leviable thereon as is in excess of 5 per cent *ad valorem*, provided that—

(1) the Collector of Central Excise is satisfied that—

(i) the power alcohol is intended for use in manufacture of—

(a) laminated products; or

(b) nitrocellulose finishes, lacquers or thinners; or

(c) acetic acid or ethyl acetate; or

(d) cellulose acetate; or

(e) ethylene or ethylene based products; or

(f) ceramic capacitors; or

(g) butadiene or synthetic rubbers; or

(h) D.D.T. or shellac; or

(i) normal butyl alcohol or normal butyl acetate; or

(j) pharmaceuticals or dyestuffs; or

(k) malathion or parathion technical; or

(l) enamels or varnishes; or

(m) base chemicals intended for use in the manufacture of drugs or medicines; or

(n) printing, duplicating or stamp-pad ink or stencil paper of carbon paper or type-writing ribbons; or

(o) diethyl phthalate;

(ii) the power alcohol is intended for the purpose of analysis of nickel from alloy; and

(iii) the power alcohol is not used for providing motive power for any form of motor vehicle or aircraft or as fuel or internal combustion engines; and

(2) the procedure set out in Chapter X of the Central Excise Rules, 1944, is followed.

[No. 2/46/67/C.E.—F. No. 8/75/66-CX-III.]

A. P. KUMTAKAR, Under Secy.

**(Department of Revenue & Insurance)****CENTRAL EXCISES***New Delhi, the 4th November 1967*

**G.S.R. 1698.**—In pursuance of rule 12 of the Central Excise Rules 1944, read with sub-section (3) of section 3 of the Additional Duties of Excise (Goods of Special Importance) Act, 1957 (58 of 1957) and in supersession of the Notification S.R.O. 105(10/58-Central Excises) dated the 11th January, 1958 of the Government of India, Ministry of Finance (Department of Revenue), the Central Government hereby directs that the notification of the Government of India in the

Ministry of Finance (Revenue Division) No. 11-Central Excises dated the 5th April, 1949 and notification of the Government of India in the Ministry of Finance (Department of Revenue) No. 197/62-Central Excises dated the 17th November, 1962 shall apply *mutatis mutandis* to the grant of rebate of additional excise duty under the said Act.

[No. 243/67-C.E./F. No. 40/8/67-CX-I.]

K. L. REKHI, Under Secy.

### (Department of Revenue & Insurance)

#### CENTRAL EXCISES

New Delhi, the 4th November 1967

**G.S.R. 1699.**—In exercise of the powers conferred by sub-rule (1) of rule 8 of the Central Excise Rules, 1944, the Central Government hereby exempts polyamide chips falling under Item No. 15A of the First Schedule to the Central Excises and Salt Act, 1944 (1 of 1944) from so much of the duty of excise leviable thereon as is in excess of 20 per cent *ad valorem*, provided that—

- (i) the Collector of Central Excise is satisfied that such goods are intended for use in the manufacture of nylon yarn; and
- (ii) the procedure set out in Chapter X of the said rules is followed in respect of such goods.

2. This notification shall be deemed to have come into force on the 26th May, 1967.

[No. 244/67-C.E./F. No. 10/29/67-CX. VI.]

New Delhi, the 11th November 1967

**G.S.R. 1700.**—In exercise of the powers conferred by sub-rule (1) of rule 8 of the Central Excise Rules, 1944, the Central Government hereby makes the following further amendment in the notification of the Government of India in the Ministry of Finance (Department of Revenue) No. 163/65-Central Excises, dated the 1st October, 1965, namely :—

In the Table annexed to the said notification, for the words and figures "During the third 12 months of the commencement of production" in the heading of column 5(c), the following words and figures shall be substituted, namely :—

"During the period subsequent to the first 24 months of the commencement of production."

2. This notification shall be deemed to have come into force on the 1st day of March, 1967.

[No. 245/67-C.E./F. No. 3/16/67-CX.VI.]

**G.S.R. 1701.**—In exercise of the powers conferred by rule 96J read with sub-rule (1) of rule 8 of the Central Excise Rules, 1944, the Central Government hereby makes the following further amendment in the notification of the Government of India in the Ministry of Finance (Department of Revenue) No. 41/65-Central Excises, dated the 28th February, 1965, namely :—

In the said notification, in the first paragraph, for the existing second and third provisos and the prohibitory clause beginning with the words 'Unless the Central Government by a general or special order' and ending with the words 'rule 96J of the Central Excise Rules 1944', the following shall be substituted, namely :—

'Provided further that any person who on or after the 5th day of June, 1966, applies in pursuance of rule 174 or of other relevant provisions of the Central Excise Rules, 1944, for amendment of any licence issued before on or after that date for the manufacture of unprocessed cotton fabrics on powerlooms so as to effect a reduction in the number of powerlooms or a change in the location of the factory or in the ownership of powerlooms as specified in the licence shall be required to pay at the higher rate of Rs. 80 per powerloom per quarter or Rs. 300

per powerloom per year until he has obtained the Textile Commissioner's permission in that behalf but no such payment at the higher rate shall be required in respect of any such amendment :—

- (i) if it relates to a change in the location of the factory from one premises to another within the area controlled by the same Superintendent of Central Excise, or
- (ii) if it relates to a change of ownership applied for by the legal heirs of the deceased licensee,

and if the written permission of the Textile Commissioner is on record for the original acquisition or installation of the powerlooms, and if such amendment does not involve a reduction or increase in the number of powerlooms :

Provided also that any such person, in a case where such application relates to amendment of a licence so as to effect a reduction in the number of powerlooms specified in the licence shall after obtaining the Textile Commissioner's permission in that behalf be required to pay at the appropriate rate specified in the above Table as if no reduction had taken place, in respect of the powerlooms retained by him:

Provided also that nothing contained in this notification shall apply to a manufacturer of unprocessed cotton fabrics who has more than 49 powerlooms in all installed by him or on his behalf in one or more premises and who at any time on or after the 28th February, 1965 has been required to pay the duty of excise on unprocessed cotton fabrics manufactured by him either before or after that date at rates other than those prescribed under rule 96J of the Central Excise Rules, 1944 excepting where the Central Government otherwise directs by a general or special order'.

[No. 247/67/F. No. 16/65/66-CX.II.]

**G.S.R. 1702.**—In exercise of the powers conferred by sub-rule (1) of rule 8 of the Central Excise Rule, 1944 and in supersession of the notification of the Government of India in the former Ministry of Finance (Department of Revenue and Company Law) No. 157/64-Central Excises, dated the 16th October, 1964, the Central Government hereby exempts rayon and synthetic fibre and yarn wastes specified in column(1) of the Table hereto annexed, from so much of the duty of excise leviable thereon under item 18 of the First Schedule to the Central Excises and Salt Act, 1944 (I of 1944), as is in excess of duty mentioned in the corresponding entry in column(2) of the said Table :—

THE TABLE

Description	Duty
(1)	(2)
Godet waste, under-size cakes waste and reeling and coning waste, wet waste, hand waste, winder cut waste, spool cut waste and other wastes—	Rs. per kg.
(i) of cellulosic origin	0·60
(ii) others	3·00

**Explanation.**—For the purposes of this notification 'waste' means a tangled mass of short lengths not capable of being disentangled without considerable labour.

[No. 248/67-C.E./F. No. 11/6/64-CX.II.]

L. S. MARTHANDAM, Dy. Secy.

**MINISTRY OF TRANSPORT AND SHIPPING**

**(Transport Wing)**

**LIGHTHOUSES AND LIGHTSHIPS**

*New Delhi, the 6th September 1967*

**G.S.R. 1703.**—In exercise of the powers conferred by the proviso to Article 309 of the Constitution, the President hereby makes the following rules regulating the recruitment of Research Officer in the Department of Lighthouses and Lightships, namely :—

**1. Short title and commencement.**—(1) The rules may be called the Department of Lighthouses and Lightships (Research Officer) Recruitment Rules, 1967.

(2) They shall come into force on the date of their publication in the Official Gazette.

**2. Application.**—These rules shall apply to the post specified in column 1 of the Schedule annexed hereto.

**3. Number, classification and scale of pay.**—The method of recruitment, age limit, qualifications and other matters relating to the said post shall be as specified in columns 5 to 13 of the Schedule aforesaid.

Provided that the upper age limit specified in column 6 of the said Schedule for direct recruitment may be relaxed in the case of Scheduled Castes and Scheduled Tribes and other special categories of persons in accordance with the general orders of the Central Government issued from time to time.

**5. Disqualification.**—(a) No person, who has more than one wife living or who, having a spouse living, marries in any case in which such marriage is void by reason of its taking place during the life time of such spouse, shall be eligible for appointment to the said post; and

(b) No woman, whose marriage is void by reason of the husband having a wife living at the time of such marriage or who has married a person who has a wife living at the time of such marriage shall be eligible for appointment to the said post:—

Provided that the Central Government may, if satisfied that there are special grounds for so ordering, exempt any person from the operation of this rule.

**6. Power to relax.**—Where the Central Government is of the opinion that it is necessary or expedient so to do, it may, by order, for reasons to be recorded in writing, and after consultation with the Union Public Service Commission, relax any of the provisions of these rules with respect to any class or category of persons.

## SCHEDULE I

Recruitment Rules for the post of Research Officer, Optical Laboratory, Department of Lighthouses and Lightships in the Ministry of Transport and Aviation (Department of Transport & Shipping)

[No. F. 3/21(3)/67-R.R.]

Name of port	No. of posts	Classification	Scale of pay	Whether selection post or non-selection post	Age for direct recruits	Educational and other qualifications required for direct recruits	Whether age and educational qualifications prescribed for direct recruits will apply in the case of promotees	Period of probation if any	Method of recruitment whether by direct or by deputation/transfer and percentage of the vacancies to be filled by various methods	In case of recruitment by promotion/deputation/transfer grades from which promotion/transfer to be made	If a D.P.C. exists what is its composition.	Circumstances in which U.P.S.C. is to be consulted in making recruitment
1	2	3	4	5	6	7	8	9	10	11	12	13
Research Officer	1	General Central Service Class I Gazetted.	Rs. 400—40—800—50—950.	Selection	35 years & below (Relaxable for Govt. servant).	Essential: Diploma of the Madras Institute of Technology (DMIT) in Instrument Technology or M.Sc. in Applied Physics with specialisation in optics OR any recognised equivalent qualification.  Desirable : Experience in Industry or Research.	Age-No. Educational Qualifications Yes.	2 years.	By promotion failing which by direct recruitment	Promotion: 1. Research Asstts. 2. Technical Asstts. with 5 year's service in the grade.	Class I Departmental Promotion Committee.	As required under the Rules.



(Qualifications  
relaxable at  
Commission's  
discretion in  
case of candi-  
dates} other-  
wise well qua-  
lified.)

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[N. F.11-ML(10)/66.]

JASWANT SINGH, Under Secy.

## (Transport Wing)

## PORTS

*New Delhi, the 30th October 1967*

**G.S.R. 1704.**—In exercise of the powers conferred by sub-section (1) of section 3 of the Major Port Trusts Act, 1963 (38 of 1963), the Central Government of India makes the following amendment in the notification of the Government of India in the Ministry of Transport No. G.S.R. 453 dated the 31st March, 1964, namely:

In the said notification, the entry occurring against serial No. 6 shall be omitted.

[No. 2-PG(28)/67-1.]

**G.S.R. 1705.**—In pursuance of sub-section (6) of section 3 of the Major Port Trusts Act, 1963 (38 of 1963), the name of the following person who has been elected as a trustee of the Port of Kandla for the period ending on the 31st March 1968, is notified for general information.

Name of the person elected

Constituency from which elected.

Shri Jasbhi G. Vaidya

Gandhinagar Municipality,  
Gandhidham (Kutch).

[No. 2-PG(28)/67-II.]

K. L. GUPTA, Under Secy.

## DEPARTMENT OF COMMUNICATIONS

## (P.&amp;T.) Board

*New Delhi, the 21st October 1967*

**G.S.R. 1706.**—In exercise of the powers conferred by the proviso to Article 309 of the Constitution, the President hereby makes the following rules regulating the method of recruitment of persons to the posts of Office Superintendents in the offices of the General Manager, P. and T. Workshops and the Managers, Telegraph Workshops, Calcutta and Jabalpur and Manager, Bombay Telephone Workshops, Bombay under the Department of Communications (P. & T. Board), namely :—

1. **Short title.**—These rules may be called the P. & T. Workshops Organisation (Office Superintendents) Recruitment Rules, 1967.

2. **Application.**—These rules shall apply for recruitment to the posts specified in column 1 of the Schedule annexed hereto.

3. **Classification and scale of pay.**—The classification of the said posts and the scale of pay attached thereto shall be as specified in columns 2 and 3 respectively of the said schedule.

4. **Method of recruitment, age limit and other qualifications.**—The method of recruitment, age limit, qualifications and other matters connected therewith shall be as specified in columns 4 to 8 of the schedule aforesaid.

SCHEDULE

Name of Post	Classification	Scale of Pay	Method of recruitment if by promotion, whether selection post or non-selection post and the cadres from which promotion is made	Age limit	Educational qualification and other qualification required	Period of Probation	If a Deptl. Promotion Committee exists, its composition.
1	2	3	4	5	6	7	8
Office Superintendent, Office of the General Manager, P. & T. Workshops, Calcutta	General Central Service Class III, Non-Gazetted Ministerial.	Rs. 350—20 450—25— 475.	Promotion by selection from amongst clerks in the Higher Selection Grade in the office of the General Manager, P. & T. Workshops failing which from amongst Lower Selection Grade Clerks who have put in not less than five years service in that grade.	Nil	Nil	2 years	Class III D.P.C.
Office Superintendent, Office of the Manager, Telegraph Workshops, Calcutta/Jabalpur and Manager, Bombay Telephone Workshops, Bombay.	Do.	Do.	Promotion by selection from amongst clerks in the Higher Selection Grade in the office of the Manager, Telegraph Workshops, Calcutta or the office of the Manager, Telegraph Workshops, Jabalpur or as the case may be the office of the Manager, Bombay Telephone Workshops, Bombay failing which from amongst Lower Selection Grade Clerks in the office concerned who have put in not less than five years service in the grade.	Nil	Nil	Do.	Do.

[No. 2-6/62-WK.]  
K. BHARATHAN,  
Asstt. Director General (Sy)

# MINISTRY OF WORKS, HOUSING & SUPPLY

(Deptt. of W. & H.)

New Delhi, the 31st October 1967

**G S R 1707.**—In exercise of the powers conferred by the proviso to article 309 of the Constitution, the President hereby makes the following rules further to amend the Town and Country Planning Organisation (Class I and II posts) Recruitment Rules, 1964, published with the notification of the Government of India in the Ministry of Health No. G.S.R. 1483 dated the 1st October, 1964, namely :—

1 (1) These rules may be called the Town and Country Planning Organisation (Class I and II posts) Recruitment (Third Amendment) Rules, 1967

(2) They shall come into force on the date of their publication in the Official Gazette

2 In the Schedule to the Town and Country Planning Organisation (Class I and II posts) Recruitment Rules, 1964, items 1 to 18 shall be renumbered as items 2 to 19 respectively and before item 2 as so renumbered, the following item and entries shall be inserted, namely :—

Name of Post	No of posts	Classifi- cation	Scale of pay	Whether Selection Post or Non- Sele- tion Post	Age for direct recruits	Educational and other qualifications required for direct recruits	Whether age and educational qualifica- tions prescribed for direct recruits will apply in the case of Promotees	Period of probation, if any	Method of recruitment whether by direct re- cruitment or by pro- motion or by deputation/ transfer & percentage of the vacancies to be filled by various methods	In case of recruitment by promo- tion/depu- tation/ transfer, which grades from which promo- tion/depu- tation/ transfer to be made	If a De- partmental Promotion Committee exists, what is its com- position	Circum- stances in which Union Public Service Commis- sion is to be con- sulted in making recruit- ment.
1	2	3	4	5	6	7	8	9	10	11	12	13
Chief Planner.	1	General Central Service, Class I (Gazetted)	Rs. 1800 —100— 2000.	Sele- ction	Not exceed- ing 50 years (Relax- able for Govt. ser- vants).	<i>Essential:</i> (i) Degree in Regio- nal Town Plan- ning or in Archi- tecture from a recognised Uni- versity/Institution, or equivalent quali- fication.	Age No. Qualifica- tions—Yes.	Two years	By promo- tion failing which by direct re- cruitment.	<i>Promotion.</i> Architect Planner and Town & Country Planners with at least 5 years ser- vice in the grade.	Class I Depart- mental Promotion Committee	As re- quired under the rules.

(ii) About 10 years experience in Architecture or Town Planning in a responsible position.

(iii) Familiarity with Planning, administration and law.

(iv) Administrative experience.

(Qualifications relaxable at Commission's discretion in the case of candidates otherwise well qualified).

*Desirable :*

(i) Degree or Diploma in Architecture or Civil Engineering (in case of those possessing Regional or Town Planning qualifications), or in Regional or Town Planning (in case of those possessing Architectural qualifications) from a recognised University/Institute, or equivalent qualification.

1	2	3	4	5	6	7	8	9	10	11	12	13
						(ii) Fellowship of the Institute of Town Planners (India) or of the Indian Institute of Architects, or equivalent membership of a professional Institute.						

[No. 16021/4/67-UD.]

B. K. SAHI, Under Secy.

**MINISTRY OF FOOD, AGRICULTURE, COMMUNITY DEVELOPMENT AND  
COOPERATION**

**(Department of Agriculture)**

*New Delhi, the 26th October 1967*

**G.S.R. 1708.**—In exercise of the powers conferred by the proviso to article 309 of the Constitution, the President hereby makes the following rules to amend the All India Soil and Land Use Survey Organisation (Technical Class III Posts) Recruitment Rules, 1967, namely:—

1. (1) These rules may be called the All India Soil and Land Use Survey Organisation (Technical Class III Posts) Recruitment (Amendment) Rules, 1967,  
(2) They shall come into force on the date of their publication in the Official Gazette.
2. In the Schedule to the All India Soil and Land Use Survey Organisation (Technical Class III Posts) Recruitment Rules, 1967, after Serial No. 3 and the entries relating thereto, the following Serial Nos. and entries shall be inserted, namely :—

1	2	3	4	5	6	7	8	9	10	11	12	13	14
"4 Senior Cartographic Assistant.	Four	—do—	Rs. 210—10 —290—15— 320—EB— 15—425.	Non- selec- tion.	18—25 years.	Essential : (i) Master's degree in Geography. (ii) Experience of all surveying methods, representation of the physical features of the earth by means of climatic charts and diagrams and graphs, etc.	No	Two years	50% by promo- tion, and 50% by direct recruit- ment.	Promotion : Cartographic Assistants with three years' service in the grade.	D.P.C. for Class III posts.	As re- quired under the rules	
5 Cartographic Assistant.	Two	—do—	Rs. 150—5 —160—8— 240—EB— 8—280—10 —300.	—do—	18—25 years.	Essential : Bachelor's degree with Geo- graphy as one of the sub- jects.	No	Two years.	100% by promo- tion, fail- ing which by direct recruit- ment.	Promotion : Junior Car- tographic Assistants with three years' service in the grade.	—do—	—do—	
OR													
Matriculation with five years' experience of Litho drafting or working in Litho Press.													
6 Junior Cartographic Assistant.	Two	—do—	Rs. 110—4 —150—EB —4—170— 5—180—EB —5—200.	Not appli- cable,	18—25 years.	Essential : Matriculation with two years' experience of Litho drafting or working in Litho Press for type composition.	Two years.	By dir- ect rec- ruitment.	Not appli- cable.	Not appli- cable.	—do—	—do—	



(Départment of Agriculture)

(Indian Council of Agricultural Research)

*New Delhi, the 18th October 1967*

**G.S.R. 1709.**—In pursuance of the provisions of rule 45 of the Fundamental Rules, the President hereby makes the following rules further to amend the Supplementary Rules relating to Division XXVI-J the Indian Agricultural Research Institute (Allotment of Residences) Rules, 1960 published with the Notification of the Government of India in the Ministry of Food and Agriculture (Department of Agriculture) No. G.S.R. 875, dated the 7th June, 1960, namely:—

(1) These rules may be called the Indian Agricultural Research Institute (Allotment of Residences) Amendment Rules, 1967.

(2) In the Indian Agricultural Research Institute (Allotment of Residences) Rules, 1960,—

Under S.R. 317-J-4 further existing definition of "Priority date", the following shall be substituted, namely:—

"Priority date" of an officer, in relation to a Class of residence to which he is entitled under rule S.R. 317-J-5 means the earliest date from which he has been continuously drawing emoluments of a particular class or a higher class and has also been continuously holding a qualifying appointment except for periods of leave."

"Provided that the condition of continuously holding a qualifying appointment shall not apply to a permanent officer of the Indian Agricultural Research Institute on his rejoining the Institute after his return from deputation or foreign service. In such a case, the period of deputation/foreign service and the qualifying service prior to that rendered by him in the Indian Agricultural Research Institute, shall count for the purpose of determining his "Priority date" subject to the condition that for the period of deputation/foreign service, he would be deemed to be entitled to the class of residence to which he was entitled at the time he went out of the Institute on deputation. Any change of emoluments in his deputation/foreign post will not entitle him to a change in the class of residence to which he is entitled."

"Provided further that if two or more officers have the same priority date, the respective priority among in relation to each of them shall be determined by the amount of emoluments, drawn by each, or where emoluments also are same, by the period for which these emoluments have been drawn in the post held by the applicant, at the time of application".

[No. F. 13-2/66-Instt.-I.]

J. S. UPPAL, Under Secy.

MINISTRY OF RAILWAYS

(Railway Board)

*New Delhi, the 3rd November 1967*

**G.S.R. 1710.**—In exercise of the powers conferred by the proviso to article 369 of the Constitution, the President hereby makes the following rules to amend the Indian Railway Accounts Service Recruitment Rules, 1966, namely:—

1. (1) These rules may be called the Indian Railway Accounts Service Recruitment (Amendment) Rules, 1967.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Indian Railway Accounts Service Recruitment Rules, 1966, rule 18(2) in Part IV—Recruitment by promotion, shall be substituted by the following:—

“(2) Not more than 33-1/3 per cent of the vacancies will be filled by departmental promotion, 20 1/3 per cent being earmarked for officers of the department and the remaining 4 per cent for officers of the Personnel Branch. These percentages are likely to be varied from time to time in consultation with the Commission, if found necessary. If sufficient number of officers are not available to fill the quota of 33-1/3 per cent, the remaining vacancies in the category shall be filled either, by transfer/deputation, or by direct recruitment through competitive examination (the particular method to be adopted on each occasion to be decided in consultation with the Commission).”

[No. E(GR)I-67RR 5-3.]

*New Delhi, the 4th November 1967*

**G.S.R. 1711.**—In exercise of the powers conferred by the proviso to article 309 of the Constitution, the President hereby makes the following rules regulating the method of recruitment to the posts of Deputy Chief Marine Superintendent, Mokamaghat, District Mechanical Engineer (Marine) and Assistant Mechanical Engineer (Marine) in the Marine Branch of the Indian Railways, namely:—

1. **Short title and commencement.**—(1): These rules may be called the Indian Railways (Marine Branch) Recruitment Rules, 1967.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. **Application.**—These rules shall apply to the posts as specified in column 1 of the Schedule hereto annexed.

3. **Number, classification and scales of pay.**—The number of posts, their classification and the scales of pay attached thereto shall be as specified in columns 2 to 4 of the Schedule.

4. **Method of Recruitment, age limit and other qualifications.**—The method of recruitment, age limit and other matters relating to the said posts shall be as specified in columns 5 to 13 of the Schedule aforesaid.

5. **Disqualifications.**—(a) No person, who has more than one wife living or who, having a spouse living, marries in any case in which such marriage is void by reason of its taking place during the life-time of such spouse, shall be eligible for appointment to any of the said posts; and

(b) no woman, whose marriage is void by reason of the husband having a wife living at the time of such marriage, or who has married a person who has a wife living at the time of such marriage, shall be eligible for appointment to any of the said posts:

Provided that the Central Government may, if it is satisfied that there are special grounds for so ordering, exempt any person from the operation of this rule.

**6 Power to relax.**—Where the Central Government is of opinion that it is necessary or expedient so to do, it may, by order, for reasons to be recorded in writing and in consultation with the Union Public Service Commission, relax any of the provisions of these rules with respect to any Class or category of persons or posts

**7 Interpretation.**—If any question arises relating to the interpretation of these Rules, it shall be referred to the Central Government who shall decide the same.

SCHE

Name of Post	No. of posts	Classification	Scale of pay	Whether Selection Post or Non-Selection Post	Age limit for direct recruits	Educational and other qualifications required for direct recruits
1	2	3	4	5	6	7
1. Deputy Chief Marine Supdt. Mokamaghat.	One	Class I (Jr. Admn.)	Rs. 1300—60—1600 (A.S.)	Selection	Not exceeding 45 years (Relaxable for Govt. Servants)	<p><i>Essential :</i></p> <p>(i) I Class BOT/MOT Engineers' Certificate in Steam with diesel endorsement or a Member of the Institute of Marine Engineers or Engineer Commanders of the Indian Navy.</p> <p>(ii) Should have held a responsible post where Marine engines and boilers are constructed or repaired for at least 5 years.</p> <p>(Qualifications relaxable at Commission's discretion in the case of candidates otherwise well-qualified).</p>
2. District Mechanical Engineer (Marine)	3	Class I (Sr. Scale)	Rs. 700 (6th year and under)—40 1100/50/2—1250 (AS)	Selection	Not exceeding 40 years (Relaxable for Govt. Servants)	<p><i>Essential :</i></p> <p>(i) II Class BOT or MOT Engineers' Certificate in Steam preferably with diesel endorsement or an Associate Member of the Institute of Marine Engineers or Lt. Commander (Engineer) of the Indian Navy.</p> <p>(ii) Should have held a responsible post</p>

DULE

Whether age and educational qualifications prescribed for the direct recruits will apply in the case of Promotees	Period of probation, if any	Method of rectt. whether by direct rectt. or by promotion or by deputation/transfer & percentage of the vacancies to be filled by various methods	In case of rectt. by promotion/deputation/transfer, grades from which promotion/deputation/transfer to be made	If a DPC exists, what is its composition	Circumstances in which U.P.S.C. is to be consulted in making recruitment
---	-----------------------------	---	--	--	--

8	9	10	11	12	13
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No.	Two years.	By promotion failing which by transfer on deputation and failing both by direct recruitment.	Promotion : (i) Marine Superintendent, Mandapam, with 3 years service in the grade. (ii) District Mechanical Engineers (Marine) with 5 years service in the grade. <i>Transfer on deputation :</i> Suitable officers holding analogous posts under Central/State Governments, Port Trusts (Period of deputation ordinarily not exceeding four years)	Selection Board.	As required under the rules.
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Age No. Qualifications Yes.	Two years.	By promotion failing which by transfer on deputation and failing both by direct recruitment.	Promotion : Assistant Mechanical Engineers (Marine) with 5 years service in the grade. <i>Transfer on deputation :</i> Suitable officers holding analogous posts under Central/State Govts. or Port Trusts. (Period of deputation ordinarily not	Class I Departmental Promotion Committee.	As required under the rules.
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I	2	3	4	5	6	7
						in a Workshop where Marine Engines and Boilers are repaired or constructed for at least 3 years.
						(iii) About 3 years experience in operation and Maintenance of Ghats on rivers.
						(Qualifications relaxable at Commission's discretion in the case of candidates otherwise well-qualified).
3. Assistant Mechanical Engineer (Marine).	4 Class I (J. S.) Class II	Rs. 400— 400—450— 30—600— 35—670— EB—35— 950(J.S.) (A.S.)	Selection	Not exceeding 35 years (Relaxable for Govt. Servants)	Essential :	(i) Inland Engineers' Certificate in Steam or diesel or Inland Master's Certificate of Competency or Lt. Engineer or Executive of the Indian Navy.
		Rs. 350—25 500—30— 590—EB —30—800—EB —830—35— 900 (Class II) (AS)				(ii) Should have served an Apprenticeship of 5 years in a Marine Workshop or at Sea as a Cadet.
						(Qualifications relaxable at Commission's discretion in the case of candidates otherwise well qualified).
						Desirable :
						Some experience in Sea-going steamers or river steamers as incharge of a watch.

8 9 10 11 12 13

exceeding three  
years).

No.	Two years.	By promotion failing which by transfer on deputation and failing both by direct recruitment.	Promotion :	Selection Board.	As required under the rules.
			(i) Ferry Supdt. Grade I [and		
			(ii) Marine En- gineer I/Foreman A with 3 years ser- vice in the respec- tive grades; and		
			(iii) Ferry Supdt. Grade II/ Ferry Inspector and		
			(iv) Marine Engineer II/Assistant Fore- man A/ Foreman B with 5 years Service in the res- pective grades.		
			Transfer on deputa- tion :		
			Suitable officers holding analogous posts under Central/ State Govts. or Port Trusts.		
			(Period of deputation ordinarily not ex- ceeding three years.)		

[No. E(GR)I-63 RR 7-1.]

C. S. PARAMESWARAN, Secy.

## MINISTRY OF EDUCATION

New Delhi, the 30th October 1967

**G.S.R. 1712.**—In exercise of the powers conferred by the proviso to article 309 of the Constitution, the President hereby makes the following rules, namely :—

1. **Short title and commencement.**—(1) These rules may be called the Survey of India (Motor Transport Officer) Recruitment Rules, 1967.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. **Application.**—These rules shall apply for recruitment to the posts specified in column 1 of the Schedule annexed hereto.

3. **Number, classification and scale of pay.**—The number of posts, their classification and the scale of pay attached thereto shall be as specified in columns 2 to 4 of the said Schedule.

4. **Method of recruitment, age limit and other qualifications.**—The method of recruitment to the said posts, age limit, qualifications and other matters connected therewith shall be as specified in columns 5 to 13 of the said Schedule;

Provided that the maximum age limit specified in column 6 for direct recruits may be relaxed in the case of candidates belonging to the Scheduled Castes or Scheduled Tribes and other special categories of persons in accordance with the orders of the Central Government issued from time to time.

5. **Disqualification.**—(a) No person, who has more than one wife living or who, having a spouse living, marries in any case in which such marriage is void by reason of its taking place during the life-time of such spouse, shall be eligible for appointment to the said posts; and

(b) no woman, whose marriage is void by reason of the husband having a wife living at the time of such marriage or who has married a person who has a wife living at the time of such marriage shall be eligible for appointment to the said posts;

Provided that the Central Government may, if satisfied that there are special grounds for so ordering, exempt any person from the operation of this rule.



SCHEDULE

Recruitment Rules for the posts of Motor Transport officer survey of India in Ministry of Education

Name of Post	No. of Posts	Classification	Scale of Pay	Whether Selection Post or non-Selection Post	Age limit for direct recruits	Educational and other qualifications required for direct recruits	Whether age and educational qualifications prescribed for the direct recruits will apply in the case of Promotees	Period of probation if any	Method of rectt. whether by direct rectt. or by promotion or by deputation/ transfer and percentage of the vacancies to be filled by various methods.	In case of rectt. by promotion/deputation/transfer, grades from which promotion/deputation/ transfer to be made.	If a DPC exists, what is its composition	Circumstances in which U.P.S.C. is to be consulted in making rectt.
1	2	3	4	5	6	7	8	9	10	11	12	13
Motor Transport Officer.	2	General Central Service Class I (Gazetted) (Non-ministerial)	Rs. 400—450—30—600—35—670—EB—35—950.	Not applicable.	35 years and below (Relaxable for Government servants)	Essential: (i) Degree in Mechanical/Automobile Engineering OR Diploma in Mechanical/Automobile Engineering, from a recognised university/Institution, or equivalent;  (ii) For diploma holders only  About five years practical experience in an M.T.	Not applicable	2 years	100% by direct recruitment. In case suitable candidates are not available by direct recruitment, the vacancy may be filled by transfer or deputation.	Transfer on deputation Suitable officers holding analogous posts under Central/State Governments and State owned or autonomous Undertakings.  (Period of deputation ordinarily not exceeding 3 years extendable up to 5 years in special circumstances)	Not applicable	As required under the rules

1	2	3	4	5	6	7	8	9	10	11	12	13
					</							

## MINISTRY OF LABOUR, EMPLOYMENT AND REHABILITATION

(Department of Labour and Employment)  
(Directorate General of Employment and Training)

New Delhi, the 27th October 1967

**G.S.R. 1713.**—In exercise of the powers conferred by sub-section (1) of section 37 of the Apprentices Act, 1961 (52 of 1961), and after consultation with the Central Apprenticeship Council, the Central Government hereby makes the following rules further to amend the Apprenticeship Rules, 1962, namely:—

1. These rules may be called the Apprenticeship (Amendment) Rules, 1967.
2. In rule 9 of the Apprenticeship Rules, 1962, for Sub-rules (2) and (3), the following sub-rules shall be substituted namely:—
  - “(2) In establishments where proper leave rules exist for the workers, the leave to apprentices shall be granted by the employers in accordance with those rules subject to the following conditions, namely:—
    - (a) that every apprentice engaged in an establishment which works for five days in a week (with a total of 45 hours per week) shall put in a minimum attendance of 222 days in a year on training, out of which one sixth, namely, 37 days, shall be devoted to related instruction and 185 days to practical training;
    - (b) that every apprentice engaged in an establishment which works for 5½ or 6 days in a week shall put in a minimum attendance of 264 days in a year on training, out of which one-sixth namely, 44 days shall be devoted to related instruction and 220 days to practical training;
    - (c) an apprentice, who for any reason is not able to undergo training for the period specified in clause (a) or clause (b), shall be given an opportunity to make up for the short-fall in the following year and shall be eligible to take the test conducted by the National Council,
      - (i) if he is engaged in an establishment referred to in clause (a), only if he has completed the period of training and has put in a minimum attendance of 666 days or 888 days according as the period of training is three years or four years, and
      - (ii) if he is engaged in an establishment referred to in clause (b), only if he has completed the period of training and has put in a minimum attendance of 792 days or 1056 days according as the period of training is three years or four years.
  - (3) If an apprentice is not able to put in the minimum period of attendance specified in clause (c) of sub-rule (2) during the period of training, he shall not be considered as having completed the full period of training and the employer may, under sub rule (2) of rule 5, extend his period of training”.

[No. 15(1)/66-AP.]

**G.S.R. 1714.**—In exercise of the powers conferred by sub-section (1) of section 37 of the Apprentices Act, 1961 (52 of 1961) and after consulting the Central Apprenticeship Council the Central Government hereby makes the following rules further to amend the Apprenticeship Rules, 1962, namely:—

1. These rules may be called the Apprenticeship (Amendment) Rules, 1967.
2. In the table under sub-rule (1) of rule 5 of the Apprenticeship Rules, 1962, under the heading “Group No. 3 Metal working trades group”, in the entries

against item 3. Welder (Gas and Electric)", for the words "Three years", the words "Two years" shall be substituted.

[No. 24(4) 66-AP.]

G. JAGANNATHAN, Under Secy.

**(Department of Labour and Employment)**

*New Delhi, the 2nd November 1967*

**G.S.R. 1715.**—In pursuance of sub-section (7) of section 5-D of the Employees' Provident Funds Act, 1952 (19 of 1952), the Central Board, with the approval of the Central Government, hereby makes the following regulations further to amend the Employees' Provident Fund (Staff and Conditions of Service) Regulations, 1962 published with the Notification of the Government of India in the late Ministry of Labour and Employment No. G.S.R. 691, dated the 10th May, 1962, namely :—

- (1) These regulations may be called the Employees' Provident Fund (Staff and Conditions of Service) Amendment Regulations, 1967;
- (2) In the Employees' Provident Fund (Staff and Conditions of Service) Regulations, 1962,
  - (1) in the First Schedule,
    - (a) in the classification of posts in Headquarters Office, under the heading 'Class I Gazetted', serial number 2 and the entries against that shall be omitted, and the serial number 3 to 13 shall be renumbered as 2 to 12 respectively.
    - (b) in the classification of Posts in Regional Offices— the heading 'Class I Gazetted', the serial number 1 and the entry against that shall be omitted; and the remaining serial numbers 2 to 11 shall be renumbered as 1 to 10 respectively.
  - (2) in the Second Schedule,

The existing serial number 1 and the entries against it in columns (2) to (13) shall be omitted and the remaining serial numbers 2 to 5 shall be renumbered as 1 to 4 respectively.

[No. 48(5)/67-PF.-I.]

*New Delhi, the 3rd November 1967*

**G.S.R. 1716.**—Whereas the Central Government is of opinion that a provident fund scheme should be framed under the Employees' Provident Funds Act, 1952 (19 of 1952), in respect of the employees of the tent making industry;

Now, therefore, in exercise of the powers conferred by sub-section (1) of section 4 of the Employees' Provident Funds Act, 1952 (19 of 1952), the Central Government hereby adds the said industry to Schedule I of the said Act.

This Notification shall come into force on the 30th November, 1967.

[No. 4/4/68-PF.-II.]

HANS RAJ CHHABRA, Under Secy.

## MINISTRY OF INDUSTRY

(Central Boilers Board)

New Delhi, the 28th February 1967

**G.S.R. 1717.**—The following draft of certain Regulations further to amend the Indian Boiler Regulations, 1950, which the Central Boilers Board proposes to make in exercise of the powers conferred by section 28 of the Indian Boilers Act, 1923 (5 of 1923), is published as required by sub-section (1) of section 31 of the said Act, for the information of all persons likely to be affected thereby; and notice is hereby given that the said draft will be taken into consideration on or after the 31st May 1967.

Any objections or suggestions which may be received from any person with respect to the said draft before the date so specified will be considered by the Central Boilers Board. Such objections or suggestions should be addressed to the Secretary, Central Boilers Board, Ministry of Industry, 'Udyog Bhavan', New Delhi.

### DRAFT REGULATIONS

1. These Regulations may be called the Indian Boiler (Amendment) Regulations, 1967.
2. In the Indian Boiler Regulations, 1950, the "NOTE" in clause (b) of Regulation 357 shall be deleted, and the following shall be inserted, namely:—  
 "For the design conditions for each type, reference may be made to APPENDIX B."
3. At the end of Regulation 359, the following shall be added, namely:—  
 "For flanges to Tables R, S and T, raised faces shall be used. The thickness specified in these Tables include a height of raised faces of 1/16 in (1.5 mm). If raised faces are provided for flanges to Tables H, J and K, the thickness of flanges shown in the Tables are inclusive of the height of raised face not exceeding 1/16 in. (1.5 mm)."
4. The following shall be added to the note below Fig. No. 33, namely:—  
 "This flange is suitable for the temperature/pressure ratings specified in APPENDIX E for flange table upto and including Table J at temperature not exceeding 850°F (454°C)"
5. The following shall be added to the note below Fig. No. 34, namely:—  
 "This flange is suitable for temperature/pressure ratings specified in APPENDIX E for flange tables upto and including Table H at temperature not exceeding 750°F (399°C)"
6. In the Indian Boiler Regulations, 1950, for APPENDIX B, the following shall be substituted, namely:—

**"APPENDIX E"**  
**FLANGES FOR PIPES, VALVES AND FITTINGS**  
**TABLES**

**TABLE I.—Temperature—Pressure Ratings for Carbon Steel Flanges**

TABLE	TEMPERATURE													TABLE
	°F 0 to 450	500	550	600	650	700	750	800	825	850	875	900	Maximum hydraulic test pressure (lb/in <sup>2</sup> ) kg/cm <sup>2</sup>	
	°C—17.8 to 232.2	260.0	287.8	315.6	343.3	371.1	399	427	441	454	468	482		

PRESSURE kg/cm <sup>2</sup> (lb/in <sup>2</sup> ).														
D	7 (100)	6.65 (95)	5.95 (85)	5.6 (80)	4.9 (70)	4.55 (65)	3.85 (65)	3.5 (50)					10.5 (150)	D
E	14 (200)	12.95 (185)	11.9 (170)	10.85 (155)	9.8 (140)	9.1 (130)	8.05 (115)	7 (100)					21 (300)	E
F	21 (300)	19.6 (280)	17.85 (255)	16.45 (235)	15.05 (215)	13.65 (195)	11.9 (170)	10.5 (150)					31.5 (450)	F
H	35 (500)	32.55 (465)	30.1 (430)	27.65 (395)	24.85 (355)	22.4 (320)	19.95 (285)	17.5 (250)	15.05 (215)	12.6 (180)	10.5 (150)	8.05 (115)	52.5 (750)	H
J	49 (700)	45.5 (650)	42 (600)	38.5 (550)	35 (500)	31.5 (450)	28 (400)	24.5 (350)	21 (300)	17.85 (255)	14.7 (210)	11.2 (160)	73.5 (1050)	J
K	63 (900)	58.45 (835)	53.90 (770)	49.35 (705)	45.15 (645)	40.6 (580)	36.05 (515)	31.5 (450)	27.30 (390)	22.75 (325)	18.55 (265)	14.35 (205)	94.5 (1350)	K
R	84 (1200)	78.05 (1115)	72.1 (1030)	66.15 (945)	59.85 (855)	53.9 (770)	47.95 (685)	42 (600)	36.4 (520)	30.45 (435)	24.85 (355)	19.25 (275)	126 (1800)	R
S	126 (1800)	116.9 (1670)	108.15 (1545)	99.05 (1415)	89.95 (1285)	78.05 (1155)	72.1 (1030)	63 (900)	54.6 (780)	45.85 (655)	37.45 (535)	29.05 (415)	189 (2700)	S
T	196 (2800)	182 (2600)	169 (2400)	154 (2200)	140 (2000)	126 (1800)	112 (1600)	98 (1400)	84.7 (1210)	71.75 (1025)	58.45 (835)	45.15 (645)	294 (4200)	T

Intermediate values: above 450°F (232.2°C) may be obtained by linear interpolation.

TABLE 2.—Temperature—Pressure Ratings for Alloy Steel Flanges

TEMPERATURE																	
TABLE	°F 0 to 450	500	550	600	650	700	750	800	825	850	875	900	925	950	975	Maximum hyd- raulic test pres- sure/ (lb in <sup>2</sup> ) kg/ cm <sup>2</sup>	TABLE
	°C—17.8 to 232.2	260.0	287.8	315.6	343.3	371.1	399	427	441	454	468	482	496	510	524		
PRESSURE kg/cm <sup>2</sup> (lb/in <sup>2</sup> )																	
H	37 (50.2)	32.90 (470)	31.15 (445)	29.05 (415)	27.3 (390)	25.2 (360)	23.45 (335)	21.35 (305)	20.3 (290)	19.6 (280)	18.55 (265)	17.5 (250)	16.5 (235)	15.5 (220)	14.5 (205)	13.5 (190)	H
J	49	46.2 (660)	43.4 (620)	40.95 (585)	38.15 (545)	35.35 (505)	32.55 (465)	30.1 (430)	28.7 (410)	27.3 (390)	25.9 (370)	24.5 (350)	23.5 (335)	22.5 (320)	21.5 (305)	20.5 (290)	J
K	62 (900)	59.5 (850)	55 (800)	52 (750)	49 (700)	45.5 (650)	42 (600)	38.5 (550)	36.75 (525)	35 (500)	33.25 (475)	31.5 (450)	29.5 (425)	27.5 (400)	25.5 (375)	23.5 (350)	K
R	84 (1200)	79.45 (1130)	74.55 (1065)	70 (1000)	65.45 (935)	60.55 (865)	56 (800)	51.45 (735)	49 (700)	46.55 (665)	44.45 (635)	42 (600)	39.5 (565)	37.5 (540)	35.5 (515)	33.5 (490)	R
S	112 (1800)	110 (1700)	112 (1600)	110 (1500)	98 (1400)	91 (1300)	84 (1200)	77 (1100)	73.5 (1050)	70 (1000)	66.5 (950)	63 (900)	59.5 (850)	56 (800)	52.5 (750)	49 (700)	S
T	196 (2800)	185.15 (2645)	174.65 (2490)	163.4 (2335)	152.6 (2180)	141.4 (2020)	130.55 (1865)	119.7 (1710)	114.45 (1635)	108.85 (1555)	103.6 (1480)	98 (1400)	92.5 (1325)	87 (1250)	81.5 (1175)	76 (1100)	T

TABLE 3.—Temperature—Pressure Ratings for Grey Cast Iron and Malleable Cast Iron Flanges

TEMPERATURE					
°F 0 to 250	0 to 300	0 to 350	0 to 375	Up to 400	Maximum hydraulic test pressure (lb/in <sup>2</sup> ) Kg/Cm <sup>2</sup>
°C —17·8 to 121·1	—17·8 to 148·9	—17·8 to 176·7	—17·8 to 190·6	204·4	

TABLE

PRESSURE kg/cm<sup>2</sup> (lb/in<sup>2</sup>)

Boiler feed pipe installations, Steam etc.

D	7(100)	5·25(75)		3·5(50)	14(200)
E	14(200)		10·5(150)	7(100)	28(400)
F	21(300)			10·5(150)	42(600)
H	35(500)	— For cast iron feed-pipes limited to 200 lbs./sq. in. (14 kg/cm <sup>2</sup> )			70(1000)
				13·3(190)	

This rating does not apply to flange sizes above (24 in.) 610 mm.

These ratings do not apply to boiler feed pipe installation or other water pipes, valves and fittings subject to shock.

TABLE 4-A.—Temperature—Pressure Ratings for Copper Alloy Flanges sizes 1/2 in. (13mm) to 3 in. (77 mm).

TEMPERATURE							
TABLE	°F 0 to 250	300	350	400	450	500	Maximum hydraulic test pressure (lbs/in <sup>2</sup> ) kg/cm <sup>2</sup>
	°C —17·8 to 121·1	148·9	176·7	204·4	232·2	260·0	
D	7 (100)	6·65 (95)	6·65 (95)	5·6 (80)	4·55 (65)	3·5 (50)	10·5 (150)
E	14 (200)	14 (200)	14 (200)	11·55 (165)	9·1 (130)	7 (100)	21 (300)
F	21 (300)	21 (300)	21 (300)	17·2 (245)	13·7 (195)	10·5 (150)	31·6 (450)
H	35 (500)	35 (500)	35 (500)	29·8 (410)	23·2 (330)	17·5 (250)	52·7 (750)
J	38·6 (550)	36·9 (525)	36·9 (525)	31 (440)	27·4 (390)	24·6 (350)	58 (825)
K	42 (700)	46·9 (670)	46·9 (670)	36·9 (525)	35 (500)	31·6 (450)	73·5 (1050)

Intermediate values may be obtained by linear interpolation.



TABLE 4-B.--Temperature--Pressure Ratings for Copper Alloy Flanges Over 3 in. (77mm)

TABLE	TEMPERATURE						Maximum hydraulic test pressure  (lb/in <sup>2</sup> ) kg./cm <sup>2</sup>
	°F 0 to 250	300	350	400	450	500	
	°C—17·8 to 121·1	148·9	176·7	204·4	232·2	260·0	
	PRESSURE kg/cm <sup>2</sup> lb/in <sup>2</sup> applying to the size range						
	Over 3 in.(77mm) to 24 in.(610mm) Over 3 in. (77 mm) to 8 in (204 mm)						
D	7 (100)	6·65 (95)	6·3 (90)	5·6 (80)	4·55 (65)	3·5 (50)	10·5 (150)
E	12·25 (175)	11·55 (165)	10·85 (155)	9·45 (135)	8·4 (120)	7 (100)	18·55 (265)
F	17·5 (250)	16·8 (240)	15·4 (220)	13·65 (195)	12·25 (175)	10·5 (150)	26·25 (375)
H	28 (400)	26·6 (380)	24·5 (350)	22·4 (320)	19·95 (285)	17·5 (250)	42 (600)
J		38·5 (550)	36·75 (525)	33·95 (485)	30·8 (440)	27·3 (390)	57·75 (825)
K		42 (700)	46·9 (670)	43·05 (615)	38·85 (555)	35 (500)	73·5 (1050)

Intermediate values may be obtained by linear interpolation.

TABLE D.—Dimensions of Plain, Integrally Cast or Forged and Welding Neck Flange.

(For ratings see Tables 1, 3 and 4)

Thickness of flange

Flange size Je gualion (nominal bore of pipe)		Diameter of flange		Bolt Circle diameter		No. of bolts		Diameter of bolts**		Grey cast iron integral- ly cast or screwed on with boss		Copper alloy cast or wrought integral or boss or plain		Wrought steel integral or plain or boss or welding neck (except for valves)		Cast steel in- tegral or plain or boss or weld- ing neck (except for valves)		Forged or cast steel integral (for valves only)	
		D		P		N		O		T <sub>1</sub>		T <sub>2</sub>		T <sub>3</sub>		T <sub>4</sub>		T <sub>5</sub>	
mm	in	mm	in	mm	in			mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
13	1/2	95	3-3/4	67	2-5/8	4		13	1/2	13	1/2	6	1/4	5	3/16	10	3/8	10	3/8
19	3/4	102	4	73	2-7/8	4		13	1/2	13	1/2	6	1/4	5	3/16	10	3/8	10	3/8
25	1	114	4-1/2	83	3-1/4	4		13	1/2	13	1/2	8	5/16	5	3/16	10	3/8	10	3/8
32	1-1/4	121	4-3/4	87	3-7/16	4		13	1/2	16	5/8	8	5/16	6	1/4	13	1/2	13	1/2
38	1-1/2	133	5-1/4	98	3-7/8	4		13	1/2	16	5/8	10	3/8	6	1/4	13	1/2	13	1/2
51	2	152	6	114	4-1/2	4		16	5/8	17.5	11/16	10	3/8	8	5/16	14.5	9/16	14.5	9/16
64	2-1/2	165	6-1/2	127	5	4		16	5/8	17.5	11/16	11	7/16	8	5/16	14.5	9/16	14.5	9/16
76	3	184	7-1/4	146	5-3/4	4		16	5/8	19	3/4	13	1/2	10	3/8	14.5	9/16	14.5	9/16
89	3-1/2	203	8	165	6-1/2	4		16	5/8	19	3/4	14.5	9/16	10	3/8	14.5	9/16	14.5	9/16
102	4	216	8-1/2	178	7	4		16	5/8	19	3/4	16	5/8	10	3/8	17.5	11/16	17.5	11/16
127	5	254	10	210	8-1/4	8		16	5/8	20.5	13/16	17.5	11/16	13	1/2	17.5	11/16	17.5	11/16
152	6	279	11	235	9-1/4	8		16	5/8	20.5	13/16	17.5	11/16	13	1/2	17.5	11/16	17.5	11/16
178	7	305	12	260	10-1/4	8		16	5/8	22	7/8	19	3/4	13	1/2	19	3/4	19	3/4
203	8	337	13-1/4	292	11-1/2	8		16	5/8	22	7/8	19	3/4	13	1/2	19	3/4	19	3/4
2	9	368	14-1/2	324	12-3/4	8		16	5/8	22	7/8	19	3/4	16	5/8	19	3/4	19	3/4
34	10	406	16	356	14	8		19	3/4	25	1	19	3/4	16	5/8	19	3/4	19	3/4
55	12	457	18	406	16	12		19	3/4	25	1	22	7/8	19	3/4	22	7/8	22	7/8
30	13	489	19-1/4	438	17-1/4	12		19	3/4	25	1	22	7/8	19	3/4	22	7/8	22	7/8
56	14	527	20-3/4	470	18-1/2	12		22	7/8	29	1-1/8	25	1	22	7/8	25	1	25	1
81	15	552	21-3/4	495	19-1/2	12		22	7/8	29	1-1/8	25	1	22	7/8	25	1	25	1
106	16	578	22-3/4	521	20-1/2	12		22	7/8	29	1-1/8	25	1	22	7/8	25	1	25	1

432	17	610	24	552	21-3/4	12	22	7/8	29	1-1/8	29	1-1/8	25	1	29	1-1/8	29	1-1/8
457	18	641	25-1/4	584	23	12	22	7/8	32	1-1/4	29	1-1/8	25	1	29	1-1/8	29	1-1/8
483	19	673	26-1/2	610	24	12	22	7/8	32	1-1/4	29	1-1/8	25	1	29	1-1/8	29	1-1/8
508	20	705	27-3/4	641	25-1/4	16	22	7/8	32	1-1/4	32	1-1/4	29	1-1/8	32	1-1/4	32	1-1/4
533	21	737	29	672	26-1/2	16	22	7/8	35	1-3/8	32	1-1/4	29	1-1/8	32	1-1/4	32	1-1/4
559	22	762	30	699	27-1/2	16	25	1	35	1-3/8	32	1-1/4	29	1-1/8	32	1-1/4	32	1-1/4
584	23	787	31	724	28-1/2	16	25	1	35	1-3/8	35	1-3/8	29	1-1/8	35	1-3/8	35	1-3/8
610	24	826	32-1/2	756	29-3/4	16	25	1	35	1-3/8	35	1-3/8	32	1-1/4	35	1-3/8	36	1-3/8

\*(O) For 13mm (1/2 in) and 16 mm (5/8 in) bolts, the diameters of the holes shall be 1.5mm (1/16 in) larger than the bolts and for 19mm (3/4 in) bolts and sizes above, the diameters shall be not more than 3mm (1/8 in) larger than the bolts. For cast iron flanges the diameters of the bolts holes may be 3mm (1/8 in) larger than the bolts of sizes 16mm (5/8 in) and above. For 22mm (7/8 in) bolts and sizes above, the diameters shall be not more than 3mm (1/8 in) larger than the bolts.

(T<sub>8</sub> and T<sub>9</sub>) It is impracticable to use thickness less than 13mm (1/2 in) except for boss flanges or integral flanges.

TABLE E.—Dimensions of Plain, Integrally Cast or Forged and Welding Neck Flanges

(For ratings see Tables, 1, 3 and 4)

Thickness of flange

Flange size designation (nominal bore of pipe)		Diameter of flange		Bolt Circle diameter		No. of bolts		Diameter of bolts*		Grey cast iron integrally cast or screwed on with boss		Copper alloy cast or wrought integral or boss or plain		Wrought steel integral or plain or boss or welding neck (except for valves)		Cast steel integral or plain or boss or welding neck (except for valves)		Forged or cast steel integral (for valves only)	
		D		P		N		O		T <sub>1</sub>		T <sub>2</sub>		T <sub>3</sub>		T <sub>4</sub>		T <sub>5</sub>	
mm	in	mm	in	mm	in			mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
13	1/2	95	3-3/4	67	2-5/8	4		13	1/2	13	1/2	6	1/4	6	1/4	10	3/8	10	3/8
19	3/4	102	4	73	2-7/8	4		13	1/2	13	1/2	6	1/4	6	1/4	10	3/8	10	3/8
25	1	114	4-1/2	83	3-1/4	4		13	1/2	13	1/2	8	5/16	7	9/32	10	3/8	10	3/8
32	1-1/4	121	4-3/4	87	3-7/16	4		13	1/2	16	5/8	8	5/16	8	5/16	13	1/2	13	1/2
38	1-1/2	133	5-1/4	98	3-7/8	4		13	1/2	16	5/8	10	3/8	9	11/32	13	1/2	13	1/2
51	2	152	6	114	4-1/2	4		16	5/8	19	3/4	10	3/8	10	3/8	14.5	9/16	14.5	9/16
64	2-1/2	165	6-1/2	127	5	4		16	5/8	19	3/4	11	7/16	10.5	13/32	14.5	9/16	14.5	9/16
76	3	184	7-1/4	146	5-3/4	4		16	5/8	19	3/4	13	1/2	11	7/16	14.5	9/16	14.5	9/16
89	3-1/2	203	8	165	6-1/2	8		16	5/8	19	3/4	14.5	9/16	12	15/32	14.5	9/16	14.5	9/16
102	4	216	8-1/2	178	7	8		16	5/8	22	7/8	16	5/8	13	1/2	17.5	11/16	17.5	11/16
127	5	254	10	210	8-1/4	8		16	5/8	22	7/8	17.5	11/16	17.5	9/16	17.5	11/16	17.5	11/16
152	6	279	11	235	9-1/4	8		19	3/4	22	7/8	17.5	11/16	17.5	11/16	17.5	11/16	17.5	11/16
178	7	305	12	260	10-1/4	8		19	3/4	25	1	19	3/4	19	3/4	19	3/4	19	3/4
203	8	337	13-1/4	292	11-1/2	8		19	3/4	25	1	19	3/4	19	3/4	19	3/4	19	3/4
229	9	368	14-1/2	324	12-3/4	12		19	3/4	25	1	20.5	13/16	20.5	13/16	20.5	13/16	20.5	13/16
254	10	406	16	356	14	12		19	3/4	25	1	22	7/8	22	7/8	22	7/8	22	7/8
305	12	457	18	406	16	12		22	7/8	29	1-1/8	25	1	25	1	25	1	25	1
330	13	489	19-1/4	438	17-1/4	12		22	7/8	29	1-1/8	25	1	25	1	25	1	25	1
356	14	527	20-3/4	470	18-1/2	12		22	7/8	32	1-1/4	25	1	29	1-1/8	29	1-1/8	25	1
381	15	552	21-3/4	495	19-1/2	12		22	7/8	32	1-1/4	25	1	32	1-1/4	32	1-1/4	25	1
406	16	578	22-3/4	521	20-1/2	12		22	7/8	32	1-1/4	25	1	32	1-1/4	32	1-1/4	25	1

432	17	610	24	552	21-3/4	12	12	7/8	35	1-3/8	29	1-1/8	35	1-3/8	35	1-3/8	29	1-1/8
457	18	641	25-1/4	584	23	16	22	7/8	35	1-3/8	29	1-1/8	35	1-3/8	35	1-3/8	29	1-1/8
483	19	673	26-1/2	610	24	16	22	7/8	35	1-3/8	32	1-1/4	38	1-1/2	38	1-1/2	32	1-1/4
503	20	705	27-3/4	641	25-1/4	16	22	7/8	38	1-1/2	32	1-1/4	38	1-1/2	38	1-1/2	32	1-1/4
533	21	737	29	672	26-1/2	16	25	1	38	1-1/2	35	1-3/8	41	1-5/8	41	1-5/8	35	1-3/8
559	22	762	30	699	27-1/2	16	25	1	38	1-1/2	35	1-3/8	44	1-3/4	44	1-3/4	35	1-3/8
584	23	787	31	724	28-1/2	16	25	1	41	1-5/8	35	1-3/8	44	1-3/4	44	1-3/4	35	1-3/8
610	24	826	32-1/2	756	29-3/4	16	29	1-1/8	41	1-5/8	38	1-1/2	47	1-7/8	47	1-7/8	38	1-1/2

\*(O) For 13mm (1/2 in) and 16mm (5/8 in) bolts, the diameters of the holes shall be 1.5mm (1/16 in) larger than the bolts and for 19mm (3/4 in) bolts and sizes above, the diameters shall be not more than 3mm (1/8 in) larger than the bolts. For 22mm (7/8 in) bolts and sizes above, the diameters shall be not more than 3mm (1/8 in) larger than the bolts. For cast iron flanges the diameters of the bolt holes may be 30mm (1 1/8 in) larger than the bolts of sizes 16mm (5/8 in) and above.

(T<sub>3</sub> and T<sub>4</sub>) It is impracticable to use thickness less than 13mm (1/2 in) except for boss flanges or integral flanges.

**TABLE F.—Dimensions of Plain, Integrally Cast or Forged and Welding Neck Flanges**

(For ratings see Tables 1, 3 and 4)

**Thickness of flange**

Flange size designation (nominal bore of pipe)		Diameter of flange		Bolt Circle diameter		No. of bolts		Diameter of bolts*		Grey cast iron integrally cast or screwed on with boss	Copper alloy cast or wrought integral or boss or plain	Cast or wrought steel integral or plain or boss or welding neck (except for valves)	Forged or cast steel (for valves only)				
		D		P		N		O		T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>				
mm	in	mm	in	mm	in			mm	in	mm	in	mm	in				
13	1/2	95	3-3/4	67	2-5/8	4	13	13	1/2	13	1/2	8	5/16	10	3/8	10	3/8
19	3/4	102	4	73	2-7/8	4	13	13	1/2	13	1/2	8	5/16	10	3/8	10	3/8
25	1	121	4-3/4	87	3-7/16	4	16	13	1/2	10	3/8	10	3/8	10	3/8	10	3/8
32	1-1/4	133	5-1/4	98	3-7/8	4	16	16	5/8	16	5/8	10	3/8	13	1/2	13	1/2
38	1-1/2	140	5-1/2	105	4-1/8	4	16	16	5/8	16	5/8	11	7/16	13	1/2	13	1/2
51	2	155	6-1/2	127	5	4	16	16	5/8	19	3/4	11	7/16	16	5/8	16	5/8
64	2-1/2	184	7-1/4	146	5-3/4	8	16	16	5/8	19	3/4	13	1/2	16	5/8	16	5/8
76	3	203	8	165	6-1/2	8	16	16	5/8	19	3/4	14.5	9/16	16	5/8	16	5/8
89	3-1/2	216	8-1/2	178	7	8	16	16	5/8	22	7/8	16	5/8	19	3/4	19	3/4
102	4	220	9	191	7-1/2	8	16	16	5/8	22	7/8	17.5	11/16	19	3/4	19	3/4
127	5	279	11	235	9-1/4	8	19	19	3/4	25	1	19	3/4	22	7/8	22	7/8
152	6	305	12	260	10-1/4	12	19	19	3/4	25	1	22	7/8	22	7/8	22	7/8
178	7	337	13-1/4	292	11-1/2	12	19	19	3/4	25	1	22	7/8	22	7/8	22	7/8
203	8	368	14-1/2	324	12-3/4	12	19	19	3/4	29	1-1/8	25	1	25	1	25	1
229	9	406	16	356	14	12	22	22	7/8	29	1-1/8	25	1	29	1-1/8	25	1
254	10	432	17	381	15	12	22	22	7/8	29	1-1/8	25	1	29	1-1/8	25	1
305	12	489	19-1/4	438	17-1/4	16	22	22	7/8	32	1-1/4	29	1-1/8	32	1-1/4	29	1-1/8
330	13	527	20-3/4	470	18-1/2	16	25	1	32	1-1/4	29	1-1/8	35	1-3/8	29	1-1/8	
356	14	552	21-3/4	495	19-1/2	16	25	1	35	1-3/8	32	1-1/4	35	1-3/8	32	1-1/4	
381	15	578	22-3/4	521	20-1/2	16	25	1	35	1-3/8	32	1-1/4	38	1-1/2	32	1-1/4	
406	16	610	24	552	21-3/4	20	25	1	35	1-3/8	32	1-1/4	41	1-5/8	32	1-1/4	

434	17	641	25-1/4	584	23	20	25	1	38	1-1/2	35	1-3/8	44	1-3/4	35	1-3/8
457	18	673	26-1/2	610	24	20	29	1-1/8	38	1-1/2	35	1-3/8	44	1-3/4	35	1-3/8
483	19	705	27-3/4	641	25-1/4	20	29	1-1/8	38	1-1/2	35	1-3/8	44	1-3/4	35	1-3/8
508	20	737	29	673	26-1/2	24	29	1-1/8	41	1-5/8	38	1-1/2	51	2	36	1-1/2
533	21	762	30	699	27-1/2	24	29	1-1/8	41	1-5/8	38	1-1/2	51	2	38	1-1/2
559	22	787	31	724	28-1/2	24	29	1-1/8	41	1-5/8	38	1-1/2	54	2-1/8	38	1-1/2
584	23	826	32-1/2	756	29-3/4	24	32	1-1/4	44	1-3/4	41	1-5/8	57	2-1/4	41	1-5/8
610	24	851	33-1/2	781	30-3/4	24	32	1-1/4	44	1-3/4	41	1-5/8	57	2-1/4	41	1-5/8

\*(O) For 13 mm (1/2 in) and 16 mm (5/8 in) bolts, the diameters of the holes shall be 1.5 mm (1/16 in) larger than the bolts and for 19 mm (3/4 in) bolts and sizes above, the diameters shall be not more than 3mm (1/8 in) larger than the bolts. For cast iron flanges the diameters of the bolt holes may be mm (1/8 in) larger than the bolts of sizes 16 mm (5/8 in) and above.

(T<sub>7</sub>) It is impracticable to use thickness less than 13mm (1/2 in) except for boss flanges or integral flanges.

TABLE H.—Dimensions of Plain, Integrally Cast or Forged and Welding Neck Flanges

(For ratings see Tables 1, 2, 3 and 4)

Thickness of flange

Flange size designation (nominal) bore of pipe	Diameter of flange	Bolt Circle Diameter	No. of bolts	Diameter of bolts*	Grey cast iron integrally cast or screwed on with boss	Copper alloy cast or wrought integral or boss or plain	Cast or wrought steel integral or plain or boss or welding neck (except for valves)	Forged or cast steel integral (for valves only)
	D	P	N	O	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>
mm in	mm in	mm in		mm in	mm in	mm in	mm in	mm in
13 1/2	114 4-1/2	83 3-1/4	4	16 5/8	16 5/8	10 3/8	13 1/2	13 1/2
19 3/4	114 4-1/2	83 3-1/4	4	16 5/8	16 5/8	10 3/8	13 1/2	13 1/2
25 1	121 4-3/4	87 3-7/16	4	16 5/8	19 3/4	11 7/16	14.5 9/16	14.5 9/16
32 1-1/4	133 5-1/4	98 3-7/8	4	16 5/8	22 7/8	11 7/16	17.5 11/16	17.5 11/16
38 1-1/2	140 5-1/2	105 4-1/8	4	16 5/8	22 7/8	13 1/2	17.5 11/16	17.5 11/16
51 2	155 6-1/2	127 5	4	16 5/8	25 1	13 1/2	19 3/4	19 3/4
64 2-1/2	184 7-1/4	146 5-3/4	8	16 5/8	25 1	14.5 9/16	19 3/4	19 3/4
76 3	203 8	165 6-1/2	8	16 5/8	29 1-1/8	16 5/8	22 7/8	22 7/8
89 3-1/2	216 8-1/2	178 7	8	16 5/8	29 1-1/8	17.5 11/16	22 7/8	22 7/8
102 4	229 9	191 7-1/2	8	16 5/8	32 1-1/4	19 3/4	25 1	25 1
127 5	279 11	235 9-1/4	8	19 3/4	35 1-3/8	22 7/8	29 1-1/8	29 1-1/8
152 6	305 12	260 10-1/4	12	19 3/4	35 1-3/8	25 1	29 1-1/8	29 1-1/8
178 7	337 13-1/4	292 11-1/2	12	19 3/4	38 1-1/2	29 1-1/8	32 1-1/4	32 1-1/4
203 8	368 14-1/2	324 12-3/4	12	19 3/4	41 1-5/8	35 1-3/8	32 1-1/4	32 1-1/4
229 9	406 16	356 14	12	22 7/8	41 1-5/8	35 1-3/8	35 1-3/8	35 1-3/8
254 10	432 17	381 15	12	22 7/8	41 1-5/8	38 1-1/2	35 1-3/8	35 1-3/8
305 12	489 19-1/4	438 17-1/4	16	22 7/8	44 1-3/4	41 1-5/8	41 1-5/8	41 1-5/8
330 13	527 20-3/4	470 18-1/2	16	25 1	47 1-7/8	41 1-5/8	44 1-3/4	44 1-3/4
356 14	552 21-3/4	495 19-1/2	16	25 1	51 2	44 1-3/4	51 2	51 2
381 15	578 22-3/4	521 20-1/2	16	25 1	51 2	44 1-3/4	54 2-1/8	54 2-1/8
406 16	610 24	552 21-3/4	20	25 1	54 2-1/8	47 1-7/8	57 2-1/4	57 2-1/4
432 17	641 25-1/4	584 23	20	25 1	54 2-1/8	47 1-7/8	60 2-3/8	60 2-3/8
457 18	673 26-1/2	610 24	20	29 1-1/8				



483	19	705	27-3/4	641	25-1/4	20	29	1-1/8	57	2-1/4	51	2	64	2-1/2	51	2
508	20	737	29	673	26-1/2	24	29	1-1/8	57	2-1/4	51	2	67	2-5/8	51	2
533	21	762	30	699	27-1/2	24	29	1-1/8	60	2-3/8	54	2-1/8	70	2-3/4	54	2-1/8
559	22	787	31	724	28-1/2	24	29	1-1/8	60	2-3/8	54	2-1/8	70	2-3/4	54	2-1/8
584	23	826	32-1/2	756	29-3/4	24	32	1-1/4	64	2-1/2	57	2-1/4	76	3	57	2-1/4
610	24	851	33-1/2	781	30-3/4	24	32	1-1/4	64	2-1/2	57	2-1/4	76	3	57	2-1/4

\* (C) For 16 mm (5/8 in) bolts, the diameters of the holes shall be 1.5 mm (1/16 in) larger than the bolts and for 19 mm (3/4 in) bolts and sizes above, the diameters shall be not more than 3 mm (1/8 in) larger than the bolts. For cast iron flanges the diameters of the bolt holes may be 3 mm (1/8 in) larger than the bolts of the sizes 16 mm (5/8 in) and above.

TABLE J.- Dimensions of Plain, Integrally Cast or Forged, and Welding Neck Flanges

(For ratings see Tables 1, 3 and 4)

*Thickness of flange*

Flange size designation (nominal bore of pipe)		Diameter of flange		Bolt circle diameter		No. of bolts	Diameter of bolts*		Diameter of raised face	Copper alloy cast or wrought integral or boss or plain	Cast or wrought steel integral or plain or welding neck (except for valves)	Forged or cast steel integral (for valves only)	
		D		P		N	O		F	T <sub>2</sub>	T <sub>7</sub>	T <sub>9</sub>	
mm	in	mm	in	mm	in		mm	in	in	mm	in	mm	in
13	1/2	114	4 1/2	83	3-1/4	4	16	5/8	2-1/4	16	5/8	16	5/8
19	3/4	114	4-1/2	83	3-1/4	4	16	5/8	2-1/4	16	5/8	16	5/8
25	1	121	4-3/4	87	3-7/8	4	16	5/8	2-1/2	19	3/4	19	3/4
32	1-1/4	133	5-1/4	98	3-7/8	4	16	5/8	3	19	3/4	19	3/4
38	1-1/2	140	5-1/2	105	4-1/8	4	16	5/8	3-1/4	22	7/8	22	7/8
51	2	165	6-1/2	127	5	4	19	3/4	4	25	1	25	1
64	2-1/2	184	7-1/4	146	5-3/4	8	19	3/4	4-1/2	25	1	25	1
76	3	203	8	165	6-1/2	8	19	3/4	5	32	1-1/4	32	1-1/4
89	3-1/2	216	8-1/2	178	7	8	19	3/4	5-1/2	32	1-1/4	32	1-1/4
102	4	229	9	191	7-1/2	8	19	3/4	6	35	1-3/8	35	1-3/8
127	5	279	11	235	9 1/4	8	22	7/8	7	38	1-1/2	38	1-1/2
152	6	305	12	260	10-1/4	12	22	7/8	8-1/4	38	1-1/2	38	1-1/2
178	7	337	13-1/4	292	11-1/2	12	22	7/8	9-1/4	41	1-5/8	41	1-5/8
203	8	368	14-1/2	324	12-3/4	12	22	7/8	10-1/4	41	1-5/8	41	1-5/8
229	9	406	16	356	14	12	25	1	11-1/4	..	..	44	1-3/4
254	10	482	17	381	15	12	25	1	12-1/4	..	..	47	1-7/8
305	12	489	19-1/4	438	17-1/4	16	25	1	14-1/4	..	..	51	2
330	13	527	20-3/4	470	18-1/2	16	29	1-1/8	15-1/2	..	..	54	2-1/8
356	14	552	21-3/4	495	19-1/2	16	29	1-1/8	16-1/2	..	..	57	2-1/4
381	15	578	22-3/4	521	20-1/2	16	29	1-1/8	17-1/2	..	..	60	2-3/8
406	16	610	24	552	21-3/4	20	29	1-1/8	19	..	..	64	2-1/2

432	17	641	25-1/4	584	23	20	29	1-1/8	20	..	..	67	2-5/8	60	2-3/8
457	18	673	26-1/2	610	24	20	32	1-1/4	21	..	..	70	2-3/4	60	2-3/8
483	19	705	27-3/4	641	25-1/2	20	32	1-1/4	22-1/2	..	..	73	2-7/8	64	2-1/2
508	20	737	29	673	26-1/2	24	32	1-1/4	23-1/2	..	..	79	3-1/8	64	2-1/2
533	21	762	30	699	27-1/2	24	32	1-1/4	24-1/2	..	..	83	3-1/4	67	2-5/8
559	22	787	31	724	28-1/2	24	32	1-1/4	25-1/2	..	..	86	3-3/8	67	2-5/8
584	23	826	32-1/2	756	29-3/4	24	35	1-3/8	26-1/2	..	..	89	3-1/2	70	2-3/4
610	24	851	33-1/2	781	30-3/4	24	35	1-3/8	27-1/2	..	..	92	3-5/8	70	2-3/4

(O) For 16 mm (5/8 in.) bolts, the diameters of the holes shall be 1.5 mm (1/16 in.) larger than the bolts and for 19mm (3/4 in.) bolts and sizes above, the diameters shall be not more than 3mm (1/8 in.) larger than the bolts.

TABLE K. —Dimensions of Plain, Integrally Cast or Forged, and Welding Neck Flanges  
(For ratings see Tables 1, 3 and 4)

Thickness of flange

Flange size designation (nominal bore of pipe)		Diameter of flange		Bolt circle diameter		No. of bolts	Diameter of bolts*		'Diameter of raised face	Copper alloy cast or wrought integral or bolts or plain	Cast or wrought steel integral or plain or welding neck (except for valves)	Forged or cast steel integral (for valves only)			
		D		P			N	O					F	T <sub>a</sub>	T <sub>b</sub>
mm	in	mm	in	mm	in	mm	in		in	mm	in	mm	in	mm	in
13	1/2	114	4-1/2	83	3-1/4		16	5/8	2-1/2	19	3/4	19	3/4	19	3/4
19	3/4	114	4-1/2	83	3-1/4		16	5/8	2-1/2	19	3/4	19	3/4	19	3/4
25	1	127	5	95	3-3/4	4	16	5/8	3	22	7/8	22	7/8	22	7/8
32	1-1/4	133	5-1/4	98	3-7/8	4	16	5/8	3	22	7/8	22	7/8	22	7/8
38	1-1/2	152	6	114	4-1/2	4	19	3/4	3-1/2	25	1	25	1	25	1
51	2	165	6-1/2	127	5	8	16	5/8	4	25	1	25	1	25	1
64	2-1/2	184	7-1/4	146	5-3/4	8	19	3/4	4-1/2	29	1-1/8	29	1-1/8	29	1-1/8
76	3	203	8	165	6-1/2	8	19	3/4	5	32	1-1/4	32	1-1/4	32	1-1/4
89	3-1/2	229	9	184	7-1/4	8	22	7/8	5-1/2	32	1-1/4	32	1-1/4	32	1-1/4
102	4	241	9-1/2	197	7-3/4	8	22	7/8	6	35	1-3/8	35	1-3/8	35	1-3/8
127	5	279	11	235	9-1/4	12	22	7/8	7	41	1-5/8	41	1-5/8	41	1-5/8
152	6	305	12	260	10-1/4	12	22	7/8	8-1/4	41	1-5/8	41	1-5/8	41	1-5/8
173	7	343	13-1/2	292	11-1/2	12	25	1	9-1/4	44	1-3/4	44	1-3/4	44	1-3/4
203	8	368	14-1/2	318	12-1/2	12	25	1	10-1/4	47	1-7/8	47	1-7/8	47	1-7/8
229	9	406	16	356	14	16	25	1	11-1/4	..	..	51	2	51	2
254	10	432	17	381	15	16	25	1	12-1/4	..	..	51	2	51	2
305	12	489	19-1/4	432	17	16	29	1-1/8	14-1/4	..	..	57	2-1/4	57	2-1/4
330	13	546	21-1/2	483	19	16	32	1-1/4	15-1/2	..	..	64	2-1/2	60	2-3/8
356	14	572	22-1/2	508	20	16	32	1-1/4	16-1/2	..	..	67	2-5/8	60	2-3/8
381	15	603	23-3/4	539	21-1/4	20	32	1-1/4	17-1/2	..	..	73	2-7/8	64	2-1/2
407	16	629	24-3/4	565	22-1/4	20	32	1-1/4	19	..	..	76	3	67	2-5/8
432	17	653	25-3/4	597	23-1/2	20	32	1-1/4	20	..	..	83	3-1/4	73	2-7/8
457	18	718	28-1/4	653	25-3/4	20	35	1-3/8	22-1/2	..	..	89	3-1/2	76	3
508	20	787	31	711	28	20	38	1-1/2	24-1/2	..	..	98	3-7/8	83	3-1/4
559	22	870	34-1/4	781	30-3/4	20	51	2	26-1/2	..	..	105	4-1/8	89	3-1/2

\*(O) For 16mm (5/8 in.) bolts, the diameters of the holes shall be 1.5mm (1/16mm) larger than the bolts and for 19 mm (3/4 in.) bolts and sizes above, the diameters shall be not more than 3mm (1/8 in.) larger than the bolts.

TABLE R.—Dimensions of Plain Integrally Cast or Forged and Welding Neck Flanges  
(For ratings see Tables 1 and 2)

Flange size designation (nominal bore of pipe)		Diameter of flange		Bolt circle diameter		No. of bolts		Diameter of bolts*		Diameter of raised face		Cast or wrought steel integral or plain or welding neck (except for valves)		Forged or cast steel integral (for valves only)	
		D		P		N		O		F		T <sub>a</sub>		T	
mm	in.	mm	in.	mm	in.			mm	in.	in.		mm	in.	mm	in.
13	1/2	114	4-1/2	83	3-1/4	4		16	5/8	2-1/2		19	3/4	19	3/4
19	3/4	114	4-1/2	83	3-1/4	4		16	5/8	2-1/2		19	3/4	19	3/4
25	1	127	5	95	3-3/4	4		16	5/8	3		22	7/8	22	7/8
32	1-1/4	133	5-1/4	98	3-7/8	4		16	5/8	3		22	7/8	22	7/8
38	1-1/2	152	6	114	4-1/2	4		19	3/4	3 1/2		25	1	25	1
51	2	165	6-1/2	127	5	8		16	5/8	4		25	1	25	1
64	2-1/2	184	7-1/4	146	5-3/4	8		19	3/4	4-1/2		29	1-1/8	29	1-1/8
76	3	203	8	165	6-1/2	8		19	3/4	5		32	1-1/4	32	1-1/4
89	3-1/2	229	9	184	7-1/4	8		22	7/8	5-1/2		32	1-1/4	32	1-1/4
102	4	241	9-1/2	197	7-3/4	8		22	7/8	6		35	1-3/8	35	1-3/8
127	5	279	11	235	9-1/4	12		22	7/8	7		41	1-5/8	41	1-5/8
152	6	305	12	260	10-1/4	12		22	7/8	8-1/2		44	1-3/4	44	1-3/4
178	7	343	13-1/2	292	11-1/2	12		25	1	9-1/4		47	1-7/8	47	1-7/8
203	8	368	14-1/2	324	12-3/4	12		25	1	10-1/4		51	2	51	2
229	9	406	16	356	14	16		25	1	11-1/4		54	2-1/8	54	2-1/8
254	10	432	17	387	15-1/4	16		25	1	12-1/4		60	2-3/8	57	2-1/4
305	12	508	20	457	18	16		29	1-1/8	14-1/4		70	2-3/4	64	2-1/2
330	13	552	21-3/4	495	19-1/2	16		32	1-1/4	15-1/2		73	2-7/8	67	2-5/8
356	14	584	23	527	20-3/4	16		32	1-1/4	16-1/2		79	3-1/8	70	2-3/4
381	15	610	24	552	21-3/4	20		32	1-1/4	17-1/2		83	3-1/4	73	2-7/8
406	16	641	25-1/4	584	23	20		32	1-1/4	19		89	3-1/2	76	3
432	17	673	26-1/2	610	24	20		32	1-1/4	20		92	3-5/8	79	3-1/8
457	18	737	29	73	26-1/2	20		35	1-3/8	22-1/2		98	3-7/8	83	3-1/4
508	20	806	31-3/4	730	28-3/4	20		38	1-1/2	24-1/2		105	4-1/8	89	3-1/2
559	22	895	35-1/4	806	31-3/4	20		51	2	26-1/2		114	4-1/2	95	3-33/4

\* (O) For 16 mm (5/8 in.) bolts the diameters of the holes shall be 1.5 mm (1/16 in.) larger than the bolts and for 19 mm (3/4 in.) bolts and sizes above the diameters shall be not more than 3 mm (1/8 in.) larger than the bolts.

TABLE S.—Dimensions of plain, integrally cast or forged and welding neck flanges.

(For ratings see Tables 1 and 2)

Thickness of flanger.

Flange size designation (nominal bore of pipe)		Diameter of flange		Bolt circle diameter		No. of bolts	Diameter of bolts*		Diameter of raised face	Cast or wrought steel integral or plain or welding neck (except for valves)	Forged or cast steel integral (for valves only)
		D		P		N	O		F	T <sub>c</sub>	T <sub>f</sub>
mm	in	mm	in	mm	in		mm	in	in	mm	in
13	1/2	127	5	89	3-1/2	4	19	3/4	2-1/2	22	7/8
19	3/4	127	5	89	3-1/2	4	19	3/4	2-1/2	22	7/8
25	1	140	5-1/2	102	4	4	19	3/4	3	25	1
32	1-1/4	146	5-1/4	108	4-1/4	4	19	3/4	3-1/4	29	1-1/8
38	1-1/2	159	6-1/4	121	4-3/4	4	19	3/4	-1/2	29	1-1/8
51	2	171	6-3/4	133	5-1/4	8	19	3/4	3-1/2	32	1-1/4
64	2-1/2	184	7-1/4	146	5-3/4	8	19	3/4	4	32	1-1/4
76	3	203	8-1/4	165	6-1/2	8	22	7/8	4-1/2	35	1-3/8
89	3-1/2	235	9-1/4	191	7-1/2	8	22	7/8	5	38	1-1/2
102	4	248	9-3/4	203	8	8	25	1	6-1/4	41	1-5/8
114	4-1/2	267	10-1/2	216	8-1/2	8	25	1	7	41	1-5/8
127	5	286	11-1/4	235	9-1/4	12	22	7/8	7-1/2	44	1-3/4
152	6	324	12-3/4	273	10-3/4	12	25	1	8-1/4	51	2
178	7	315	14-3/4	318	12-1/2	12	29	1-1/8	9-3/4	57	2-1/4
203	8	413	16-1/4	356	14	12	32	1-1/4	10-3/4	64	2-1/2
229	9	438	17-1/4	387	15-1/4	16	29	1-1/8	11-3/4	73	2-5/8
254	10	483	19	425	16-3/4	16	32	1-1/4	13	79	2-7/8
279	11	533	21	470	18-1/2	16	35	1-3/8	14	86	3-1/8
305	12	578	22-3/4	508	20	16	38	1-1/2	15	92	3-5/8
330	13	610	24	540	21-1/4	16	38	1-1/2	16-1/4	98	3-7/8
356	14	648	25-1/2	578	22-3/4	20	38	1-1/2	17-1/4	105	4-1/8
381	15	699	27-1/2	632	24-1/2	20	41	1-5/8	18-1/2	111	4-3/8
406	16	743	29-1/4	711	26	20	44	1-3/4	19-1/2	117	4-5/8

(O) The diameters of the bolt holes shall be not more than 1.5 mm (1/8 in.) larger than the bolts.

TABLE T.—Dimensions of plain, integrally cast or forged, and welding neck flanges

(For ratings see Tables 1 and 2)

Thickness of flange

Flange size designation (nominal bore of pipe)	Diameter of flange	Bolt circle diameter	No. of bolts	Diameter of bolts*	Diameter of raised face	Cast or wrought steel integral or plain or welding neck (except for valves)	Forged or cast steel integral (for valves only)
	D	P	N	O	F	T <sub>c</sub>	T <sub>f</sub>
mm in	mm in	mm in		mm in	in	mm in	mm in
13 1/2	140 5-1/2	102 4	4	19 3/4	2-1/2	25 1	25 1
19 3/4	140 5-1/2	102 4	4	19 3/4	2-1/2	25 1	25 1
25 1	146 5-3/4	103 4-1/4	4	19 3/4	3	29 1-1/8	29 1-1/8
32 1-1/4	159 6-1/4	121 4-3/4	4	22 7/8	3-1/4	32 1-1/4	32 1-1/4
38 1-1/2	171 6-3/4	133 5-1/4	8	19 3/4	3-1/2	35 1-3/8	35 1-3/8
51 2	184 7-1/4	146 5-3/4	8	19 3/4	4	35 1-3/8	35 1-3/8
64 2-1/2	203 8	165 6-1/2	8	22 7/8	4-1/2	41 1-5/8	41 1-5/8
76 3	235 9-1/4	191 7-1/2	8	25 1	5	48 1-7/8	48 1-7/8
89 3-1/2	267 10-1/2	216 8-1/2	8	29 1-1/8	5-3/4	54 2-1/8	54 2-1/8
102 4	286 11-1/4	235 9-1/4	8	29 1-1/8	6-1/4	57 2-1/4	57 2-1/4
114 4-1/2	298 11-3/4	254 10	12	25 1	7	60 2-3/8	60 2-3/8
127 5	324 12-3/4	273 10-3/4	12	29 1-1/8	8-1/4	67 2-5/8	67 2-5/8
152 6	375 14-3/4	318 12-1/2	12	32 1-1/4	9	73 2-7/8	73 2-7/8
178 7	432 17	368 14-1/2	12	35 1-3/8	9-3/4	83 3-1/4	83 3-1/4
203 8	476 18-3/4	406 16	12	38 1-1/2	11-3/4	89 3-1/2	89 1/2
229 9	508 20	445 17-1/2	16	35 1-3/8	13	95 3-3/4	95 3/4
254 10	559 22	489 19-1/4	16	38 1-1/2	14	108 4-1/4	108 1/4
279 11	616 24-1/4	533 21	16	44 1-3/4	15	114 4-1/2	114 4-1/2
305 12	653 25-3/4	572 22-1/2	16	44 1-3/4	16-1/4	120 4-3/4	120 4-3/4
330 13	705 27-3/4	610 24	16	51 2	17-1/4	130 5-1/8	130 5-1/8

\*(O) The diameters of the bolt holes shall be not more than 3 mm (1/8 in) larger than the bolts.

The suitability of a flange not complying with the tables of flange dimensions and the temperature and pressure rating given in this Appendix shall be determined by calculations made in accordance with the formulae and procedure given below. The maximum stress in bolts or in the flange shall not exceed those permissible for materials used.

#### Permissible Stresses for Materials—

**Bronze and Cast iron**—For Bronze and Cast iron the permissible stress shall not exceed the minimum specified tensile strength for the grade of material used divided by a factor of safety of five.

**Steel for Bolts, Wrought, Cast and Forged steel**—For plain carbon and alloyed steels, the permissible stress for bolts and flanges at temperatures below 454°C (850°F) shall be the 0.2 per cent proof stress divided by a factor of safety of 1.5 for bolts and 1.1 for flanges. For temperatures above 454°C (850°F), the permissible stress for the materials for bolts and flanges shall be furnished by the makers or suppliers in the calculations.

Symbols used in the formulae given are as follows :

(all dimensions are given in millimeters, working pressure in Kg/cm<sup>2</sup>, stresses, in Kg/mm<sup>2</sup>, loads in Kgs. and temperatures in °C)

T	.	.	.	Thickness of flange
D	.	.	.	outside diameter of flange
D <sub>h</sub>	.	.	.	Diameter of pitch circle of bolts
D <sub>i</sub>	.	.	.	Inside diameter of gasket
D <sub>p</sub>	.	.	.	Outside diameter of gasket
D <sub>m</sub>	.	.	.	Mean diameter of gasket
W.P.	.	.	.	Working pressure
d <sub>b</sub>	.	.	.	diameter of bolts over threads
d <sub>eff</sub>	.	.	.	diameter of bolt at bottom of threads or shank diameter whichever is less
d <sub>h</sub>	.	.	.	diameter of bolt-hole
d	.	.	.	bore of flange
n	.	.	.	number of bolts in flange
f	.	.	.	permissible stress for material at service temperature
a <sub>1</sub>	.	.	.	gasket constant (1) as follows :

(i) 2400 for soft gaskets of thickness of the order of 1.5 mm

(ii) 3600 for metals gaskets of copper or soft steel

(iii) 7200 for flat and solid gaskets of steel or monel

a<sub>2</sub>—gasket constant (2) as follows :

32 for (i) above

40 for (ii) above

52 for (iii) above

C—temperature factor as given below :

Temp.	125	150	175	200	225	250	275	300	325	350	375	400	425	450
C	0.91	0.90	0.89	0.88	0.87	0.86	0.84	0.83	0.82	0.80	0.78	0.75	0.72	0.68

Intermediate values may be interpolated

For flanges to figures E/1, E/2, & E/3,

$$\sqrt{D_m = \frac{D_p + d}{2}} \quad \sqrt{\quad}$$

For flanges to figures E/4, & E/5,

$$\sqrt{D_m = \frac{D_h + d - d_h}{2}} \quad \sqrt{\quad}$$

m—bolt load factor, being greater of the two values.

(Figures overleaf)

$$\sqrt{\left( \frac{Ca_1}{Q \times WP} \right)} \quad \text{and} \quad \left( 1 + \frac{a^2}{[q]} \right) \quad \sqrt{\quad}$$



The value of 'm' shall not be less than 2 and need not be greater than 4 for group (i) of gaskets under a<sub>1</sub> or greater than 5 for other groups. For temperatures above 450° the value of 'm'

$$\text{shall be } \left( 1 + \frac{a^2}{q} \right)$$

$$q = \frac{D}{b_{\text{eff}}}$$

b = width of gasket

b<sub>eff</sub> = effective width of gasket for narrow faced gaskets (see table below)

Width of corrugated or serrated gasket	10	20	30	40	50	60
b <sub>eff</sub> for tongue and groove joint	2.3	5	7	8	8.5	8.8
b <sub>eff</sub> for other forms of joint	4.4	8	9.8	11.2	12.6	13.6

$$W_b = \frac{m \times \pi \times D_m^2 \times m}{400} \times WP$$

$$W.P = \frac{f \times n \times 100 \times d_{\text{eff}}}{m \times D_m^2}$$

$$W_p = \text{Load on gasket} \left( \frac{\pi \times D_m \times b \times m \times WP}{100} \right)$$

$$W_b = \text{Total load on bolts} \left( \frac{\pi \times m D_m^2 \times m \times WP}{100} \right)$$

$$W_b^I = \text{Bolt load due to internal pressure only} \left( \frac{\pi \times D_m^2 \times m \times WP}{100} \right)$$

$$W_a = \text{Axial load due to internal pressure} \left( \frac{\pi d^2}{400} \times WP \right)$$

$$W_{\text{flange}} = \text{Load on annular surface of flange inside gasket} \frac{\pi [(D_m - b)^2 - d^2]}{400} \times W.P.$$

Q = Radial force acting on the circumference of D<sub>m</sub>

For equilibrium  $W_b = W_p + W_a + W_i$

$$= WP \times \sum A$$

$$= WP \times \left[ \frac{\pi m D \times b \times m}{400} + \frac{\pi d^2}{400} + \frac{\pi (D_m - b)^2 - d^2}{400} \right]$$

M = moment of forces  $W_b, W_p, W_a$  and  $W_i$

=  $WP \times A_i$  (for moment arms See fig. E/6 overleaf)

(For  $W_b$  the line of action is to be taken through the central line of bolt holes ; for  $W_a$  through the central line of pipe wall or hub at its maximum thickness for  $W_p$  through Central

line or gasket having a width of 15 mm or less or else through a line  $b/3$  away from the outer edge of gasket for  $W_i$  through a line midway between inner line of gasket and bore of pipe. For a flat packing surface and gasket over the whole area,

$$M = 0.5 \times W_a \left( \frac{D_h - d - t}{2} \right)$$

(See figs. E/6, E/7, & E/14).

$H$  = Height of hub over inner face of flange

$t$  = thickness of pipe wall or parallel hub

$t_h$  = maximum thickness of tapered hub (fig. E/8)

$t_m$  = mean thickness of tapered hub

$$= \frac{t + 2t_h}{3} \text{ (fig. E/11)}$$

$t_{eff} = t_h + \frac{r}{3}$  where "r" is the fillet radius between hub and flanges.

$K$  = a factor for giving a measure of length of hub or shell over which the moment remains effective

$$= \frac{1.82}{\sqrt{t_m (d + t_m)}} \text{ or } \frac{1.82}{\sqrt{t (d + t)}} \text{ whichever is applicable.}$$

$M_I$  = effective moment per unit length

$$= \frac{M}{\pi (d + t_m)} \times E$$

$$\text{Where } E = \frac{g}{g^3 + (g-1)^3 + h}$$

$$g = 1 + \frac{KT}{2}$$

$$h = \frac{0.64 \times (t_m)^3}{K (d + t_m)} \times \log_e \left( \frac{D}{d} \right)$$

$$f_1 = \text{stress due to bending} = \frac{6 M_I}{t_{eff}^2}$$

$$f_2 = \text{stress due to axial load} = \frac{d \times W.P.}{400 t_{eff}}$$

$(f_1 + f_2)$  = maximum stress in flange

For values of  $KH$  equal to or greater than 1.7

$$f = \frac{6 M_I}{t_{eff}^2} + \frac{d \times WP}{400 \times t_{eff}}$$

$$WP = \frac{f}{\left[ \frac{6}{t_{eff}^2} \times \frac{A_I}{\pi (d + t_m)} \times E + \frac{d}{400 \times t_{eff}} \right]}$$

For values of KH less than 1.7,  $M_3$  shall be substituted by the following :

$$M_3 = \left(1 - \frac{KH}{1.7}\right)^2 \times (M_3 - M_2)$$

Where  $M_3$  is calculated in the same manner as  $M_1$  with long hub of uniform thickness and  $M_2$  without hub, i.e., directly attached (to pipe wall).

### WORKED OUT EXAMPLES

Examples on the calculations of bolts and Flange sizes from Tables 'H' & 'T' Appendix 'E' for different pressures and temperatures.

#### Example 1.

Flange according to Fig. B/12/1 (Table H)—Fig. overlaf.

12 bolts 19 mm dia ( $d_{eff} = 15.80$ )

Temperature & Pressure ratings—(a) 17.5 kg/cm<sup>2</sup> at 427°C  
(b) 32.7 Kg/cm<sup>2</sup> at 260°C

#### Calculations for bolts.

Case (a) Bolt material Carbon—Molybdenum steel or

Carbon—Manganese Steel (50 kg/mm<sup>2</sup> min<sup>m</sup>)

Proof stress at 427°C minimum—15 Kg/mm<sup>2</sup>.

Permissible stress at 427°C =  $\frac{15}{1.5} = 10$  Kg/mm<sup>2</sup> min<sup>m</sup>

$$D_m = 181 ; b_{eff} = 9.5$$

$$\text{Bolt load factor } m = \frac{C_{s1}}{q \times WP} \text{ or } 1 + \frac{a_2}{q}$$

$$= \frac{0.72 \times 3600 \times 9.5}{181 \times 17.5} \text{ or } 1 + \frac{40 \times 9.5}{181}$$

$$= 7.8 \text{ or } 3.1 \text{ (taken at 4)}$$

$$WP = \frac{10 \times 12 \times 100 \times 15.80 \times 15.80}{4 \times 181 \times 181} = 22.8 \text{ Kg/cm}^2$$

Case (b) Bolt material Carbon—Manganese (50 Kg/mm<sup>2</sup> min<sup>m</sup>)

Proof stress at 260°C (minimum)—20 Kg/mm<sup>2</sup>

Permissible stress at 260°C =  $\frac{20}{1.5} = 13.35$  Kg/cm<sup>2</sup>

$$\text{Bolt load factor } m = \frac{0.85 \times 2400 \times 9.5}{181 \times 32.7} \text{ or } 1 + \frac{32 \times 9.5}{181}$$

$$= 3.27 \text{ or } 2.7 \text{ (taken at 3.27)}$$

$$WP = \frac{13.35 \times 12 \times 100 \times 15.80 \times 15.80}{181 \times 181} = 37.35 \text{ Kg/cm}^2$$

#### Calculation for flange

$$\text{Case (a) } K = \frac{1.82}{\sqrt{t_m (d + t_m)}}$$

$$\text{Where } t_m = \frac{10 + 2 \times 16}{3} = 14$$

$$= \frac{1.82}{\sqrt{1 \times 14}}$$

$$= 0.037$$

$$KH = 0.038 \times 57 = 2.166 > 1.7$$

$$g = 1 + \frac{0.038 \times 28}{2} = 1.53$$

$$h = \frac{0.64 \times (14)^3}{0.038 (152 + 24)} \times \log_e \left( \frac{305}{152} \right) = 0.56$$

$$E = \frac{1.53}{(1.53)^2 + (0.53)^2} \times 0.56 = 0.482$$

$$A = \frac{\pi \times (152)^3}{400}; I_a = \frac{(210 - 19.2) - (152 + 16)}{2} = 11.4$$

$$A_b = \pi \times \left( \frac{210 + 152}{2} \right)^2 \times 4; I_b = \frac{261 - (210 - 19.2)}{2} = 351$$

(Since moments are taken about the line of action of  $W_p$  at a distance of 9.6 mm from the outer edge of the gasket)

$$\Sigma A_I = \frac{\pi}{400} \left[ (152)^2 \times 12.4 + (181)^2 \times 4 \times 35.1 \right]$$

$$= 38100$$

$$t_{eff} = t_h + \frac{r}{3} = 19.3$$

$$f_a = W.P \times \left[ \frac{6}{2} \times \frac{\Sigma A_I}{\pi(d + t_m)} \times E + \frac{d}{400 \times t_{eff}} \right]$$

$$= 17.5 \times \left[ \frac{6}{(19.3)^2} \times \frac{38100}{\pi \times 166} \times 0.48 + \frac{152}{400 \times 19.3} \right]$$

$$= 17.5 \times (0.568 + 0.0197)$$

$$= 17.5 \times 0.59$$

$$= 10.3 \text{ Kg/mm}^2$$

The material should therefore have a proof stress of  $(10.3 \times 1.1)$  or  $11.3 \text{ Kg/mm}^2$  at  $427^\circ\text{C}$  i.e., the material may have the same physical characteristics as the bolt material.

*Calculations for flange.*

Case (b)  $m = 3.2$

$$E = 0.48$$

$$t_{eff} = 19.3$$

$$A_b = \frac{\pi \times (181)^2 \times 3.2}{400}; \Sigma A_s = 30900$$

$$f_b = 32.7 \times \left[ \frac{6}{(19.3)^2} \times \frac{30900}{\pi \times 166} \times 0.48 + \frac{152}{400 \times 19.3} \right]$$

$$= 32.7 \times (0.457 + 0.0197)$$

$$= 32.7 \times 0.477$$

$$= 15.60 \text{ Kg/mm}^2.$$

The material should therefore have a proof stress of  $(15.60 \times 1.1)$  or  $17.15 \text{ Kg/mm}^2$  at  $260^\circ\text{C}$ . This is within the limits for Carbon—Manganese steel with a minimum tensile strength of  $55 \text{ Kg/mm}^2$ .

*Example 2.* Flange according to Fig. B/13/1 (Table T)—Fig. overleaf

12 bolts, 38 mm dia ( $d_{eff} = 32.7 \text{ mm}$ )

Temperature and pressure ratings (a)  $32 \text{ Kg/cm}^2$  at  $524^\circ\text{C}$ .

(b)  $98.5 \text{ Kg/cm}^2$  at  $482^\circ\text{C}$ .

(c)  $131 \text{ Kg/cm}^2$  at  $399^\circ\text{C}$

*Calculations for bolts*

Case (a) Bolt material—Special Chrome—Molybdenum steel

(95 Kg/mm<sup>2</sup> minimum)

Permissible stress—to be specified by makers along with creep relaxation properties.

$$\text{Bolt load factor } m = 1 + \frac{a_1}{q} = 1 + \frac{52 \times 12.5}{250} = 3.6$$

$$f_a = \frac{32 \times 3.6 \times 250 \times 250}{12 \times 100 \times 32.7 \times 32.7}$$

$$= 5.60 \text{ Kg/mm}^2$$

Case (b)  $m = 3.6$

$$f_b = \frac{98.5 \times 3.6 \times 250 \times 250}{12 \times 100 \times 32.7 \times 32.7} = 17.3 \text{ Kg/mm}^2$$

$$\text{with } m = 3, f_b = 14.4 \text{ Kg/mm}^2$$

$$\text{Case (c) } m = \left( \frac{0.75 \times 7200 \times 12.5}{250 \times 131} \right) \text{ or } \left( 1 + \frac{52 \times 12.5}{250} \right)$$

$$= 3.6 \text{ or } 2.06 \text{ (taken as 3 which may be regarded as optimum)}$$

$$f_c = \frac{131 \times 3 \times 250 \times 250}{12 \times 100 \times 32.7 \times 32.7}$$

$$= 19.2 \text{ Kg/mm}^2$$

*Calculations for flange.*

$$\text{Case (a) } t_m = \frac{36.5 + 2 \times 51}{3} = 46.16$$

$$K = \frac{1.82}{\sqrt{46.16} (203 + 46.16)} = 0.017$$

$$KH = 0.017 \times 115 = 1.955 > 1.7$$

$$g = 1 + \frac{0.017 \times 89}{2} = 1.757$$

$$h = \frac{0.64 \times \left( \frac{89}{46.16} \right)^2}{0.017 \times 249.16} \times \log_e \left( \frac{476}{203} \right) = 0.932$$

$$E = \frac{1.757}{(1.757)^2 + (0.757)^2 + 0.932} = 0.38$$

$$A_a = \frac{\pi \times (203)^2}{400}; t_a = \frac{(298 - 32) - (203 + 51)}{2} = 6$$

$$A_b = \frac{\pi \times (205)^2}{400} \times 3.6; t_b = \frac{(407 - 267)}{2} = 70$$

$$t_{eff} = t_h + \frac{r}{3} = 54$$

$$\Sigma A_a = \frac{\pi}{400} \left[ (203)^2 \times 6 + (250)^2 \times 3.6 \times 70 \right]$$

$$= \pi [618 + 39400] = \pi \times 40018$$

$$f_a = \left( 32 \times \frac{6}{(54)^2} \times \frac{\pi \times 40018}{\pi \times 249.16} \times 0.8 + \frac{203}{400 \times 54} \right)$$

$$= 32 \times (0.126 + 0.0094)$$

$$= 4.31 \text{ Kg/mm}^2$$

## Example 2

Case (b)

$$m = 3.6 \text{ \& } 3$$

$$E = 0.38$$

$$t_{eff} = 54$$

$$\text{For } m = 3.6, f_b = 98.5 \left[ \frac{6}{(54)^3} \times \frac{\pi \times 40018 \times 0.38}{\pi \times 249.16} + \frac{203}{400 \times 54} \right]$$

$$= 9.79 \text{ Kg/mm}^2$$

$$\text{For } m = 3, f_a = 98.5 \left[ \frac{6}{(54)^3} \times \frac{\pi \times 33400}{\pi \times 249.16} + \frac{203}{400 \times 54} \right]$$

$$= 11.18 \text{ Kg/mm}^2$$

Case (c)

$$m = 3.6 \text{ \& } 3$$

$$E = 0.38$$

$$t_{eff} = 54$$

$$\text{For } m = 3.6, f_c = 131 \left[ \frac{6}{(54)^3} \times \frac{\pi \times 40018 \times 0.38}{\pi \times 249.16} + \frac{203}{400 \times 54} \right]$$

$$= 131 \times 0.1354$$

$$= 17.7 \text{ Kg/mm}^2.$$

$$\text{For } m = 3, f_c = 131 \times 0.1136$$

$$= 14.8 \text{ Kg/mm}^2$$

[No. BL-9(31)/63-EEI.]

P. J. MENON, Secy.

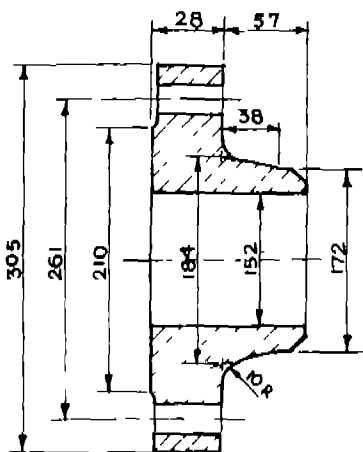


FIGURE-E/12/1

STEEL WELDING NECK FLANGE (TABLE 'H')

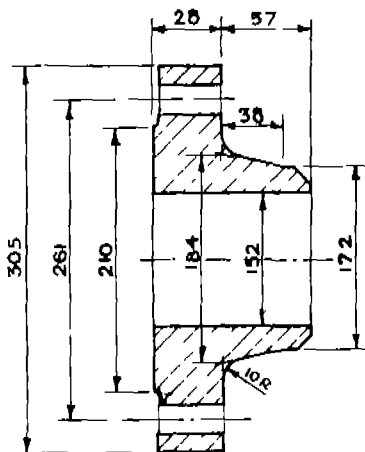


FIGURE-E/12/2

STEEL WELDING NECK FLANGE (TABLE 'H')

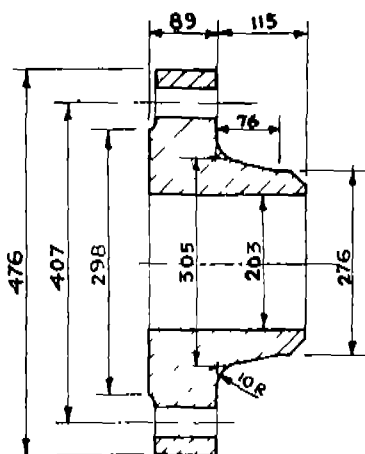


FIGURE-E/13/1

STEEL WELDING NECK FLANGE (TABLE 'T')

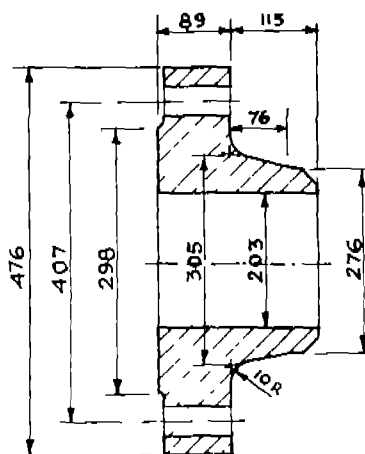


FIGURE-E/13/2

STEEL WELDING NECK FLANGE (TABLE 'T')

